

APPENDIX I

STANDARD DETAILS

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WATER DETAILS

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SANITARY SEWER DETAILS

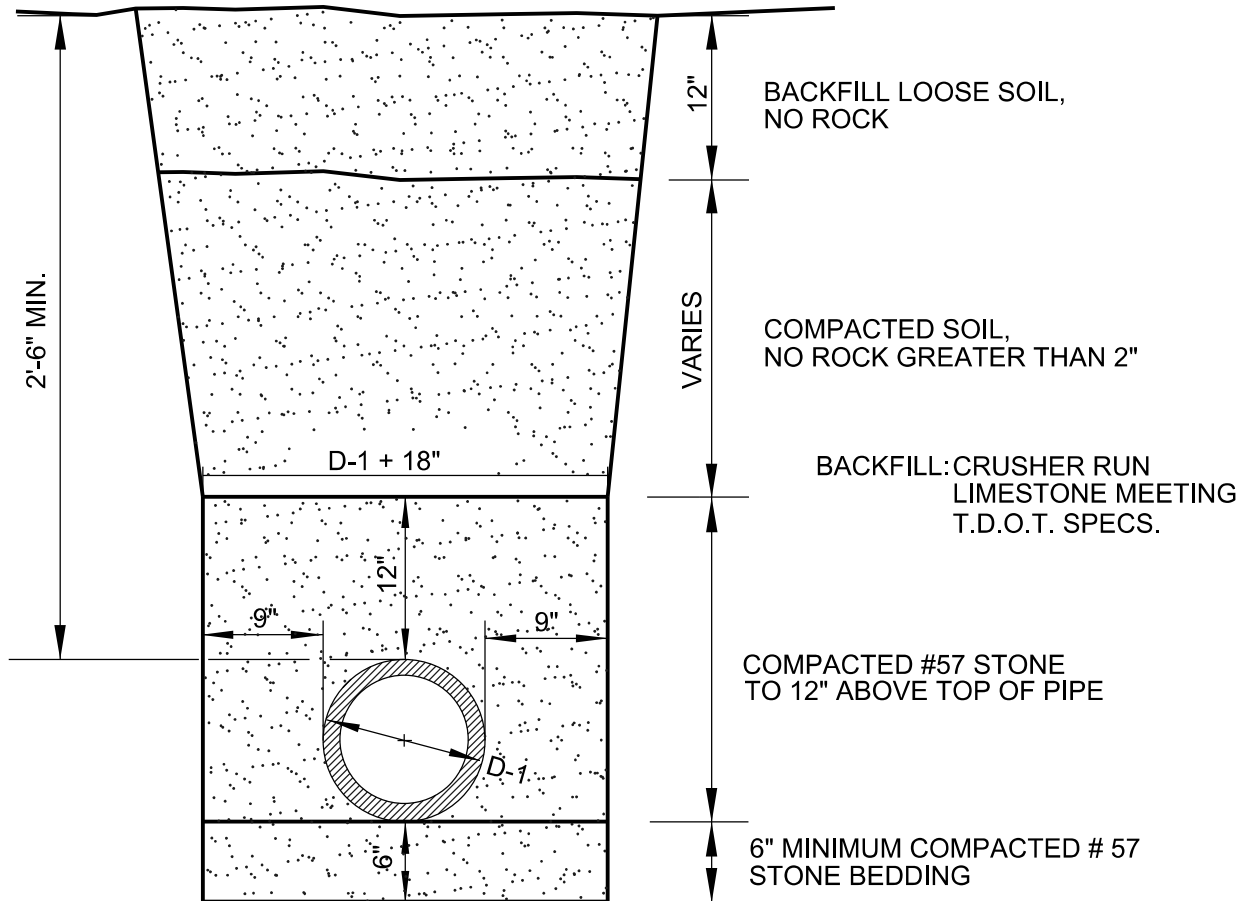
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NOTE: BACKFILL TO SUBGRADE
WITH STONE AS PER
TDOT SPECIFICATIONS
UNDER PAVED SURFACE



D-1 = OUTSIDE DIAMETER OF BELL

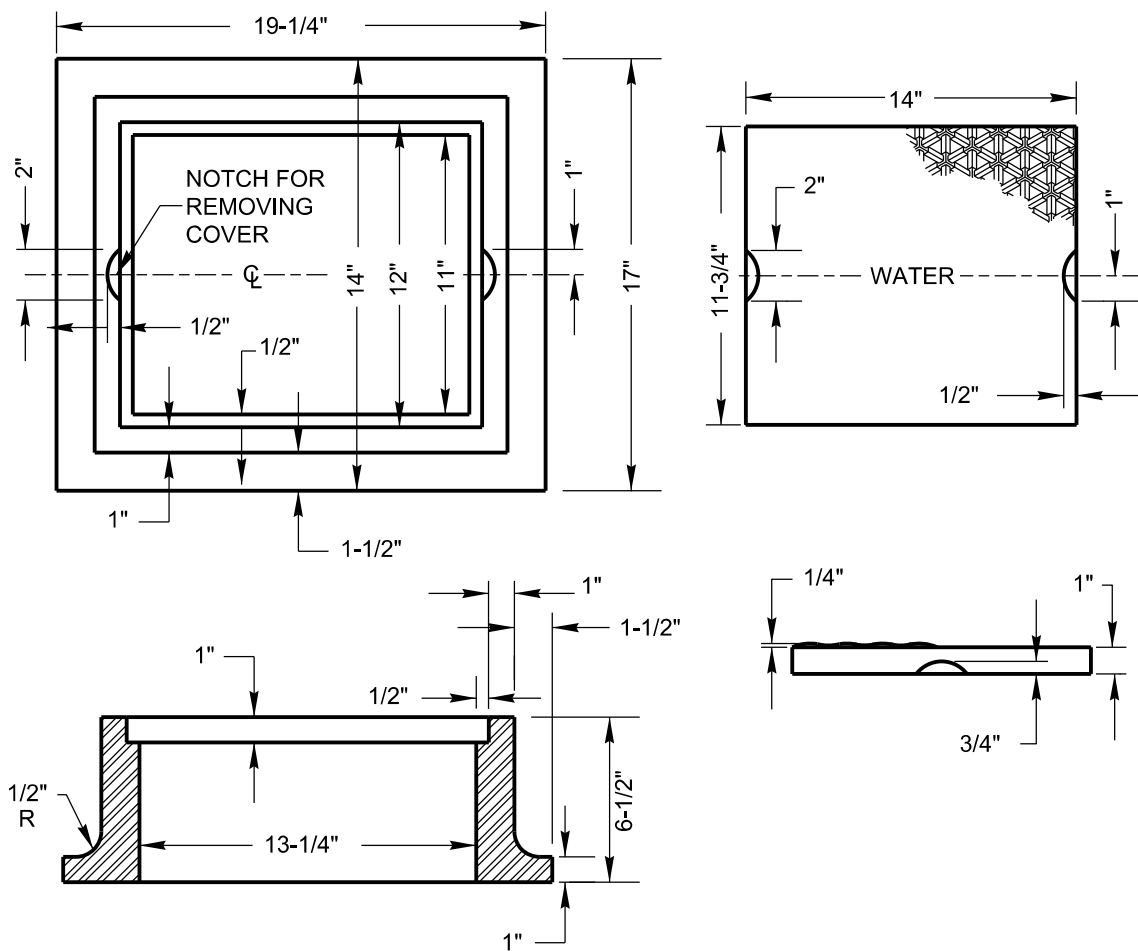


CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL

TYPICAL TRENCH
SECTION - ALL PIPE

MARCH, 2016

DRAWING NO. W-01



NOTES:

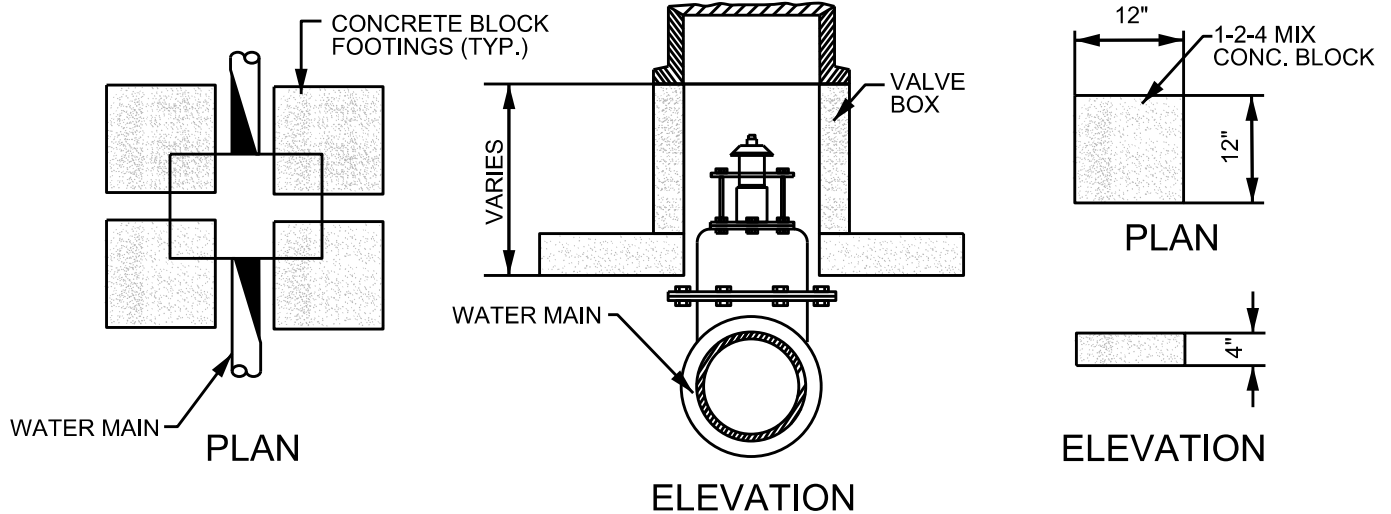
1. NO OPEN SAND CASTINGS, CASTINGS ARE TO BE MADE OF CAST IRON IN ACCORDANCE WITH CURRENT SPECIFICATIONS. COVER MUST FIT EVENLY ON RABBIT OF FRAME IN ORDER TO EQUALLY DISTRIBUTE WEIGHT OF COVER OVER FRAME MINIMUM WEIGHT OF FRAME 150 LBS. MINIMUM WEIGHT OF COVER 45 LBS.



CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL

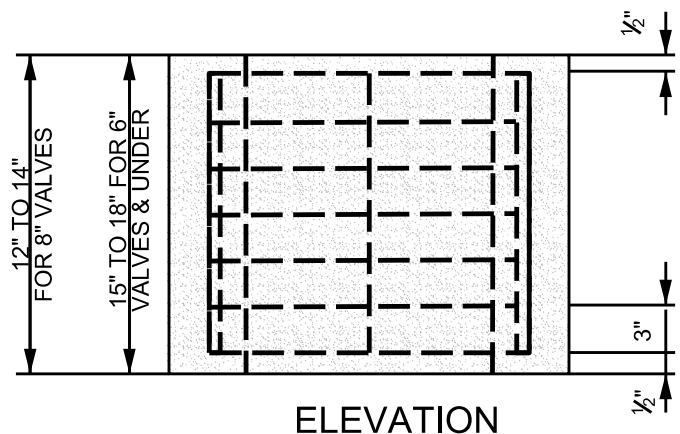
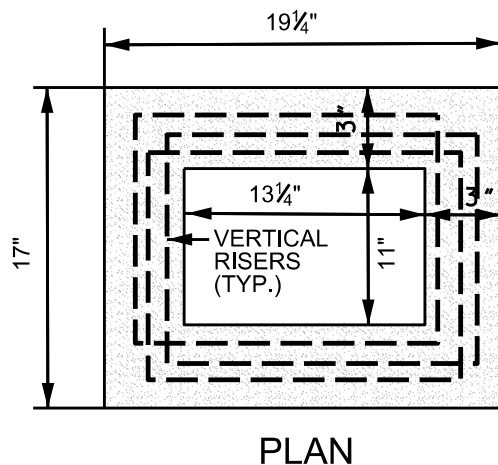
VALVE BOX
FRAME AND COVER
2" VALVE & LARGER
MARCH, 2016

DRAWING NO. W-02



NOTES:

- 1) FOUR (4) CONCRETE BLOCKS OR THE SIZE AND SHAPE SHOWN ARE TO BE PLACED UNDER EACH VALVE BOX, ONE UNDER EACH CORNER.
- 2) NO REINFORCING STEEL IN FOOTING. CONCRETE MIX 1 PART CEMENT, 2 PARTS SAND AND 4 PARTS No. 2 CRUSHED STONE OR GRAVEL. VOLUME FOR ONE BLOCK = 0.333 CU. FT. WEIGHT OF ONE BLOCK = APPROX. 50 LBS. FOR ALL FOUR BLOCKS. WEIGHT = 200 LBS. BEARING AREA ON SOIL = 576 SQ. IN.



- 1) REINFORCING TO BE 1/4\"/>
- 2) CONCRETE MIXTURE TO BE 1 PART CEMENT, 2 PARTS SAND AND 4 PARTS No. 2 CRUSHED STONE OR GRAVEL. TOTAL VOLUME OF MIXTURE FOR EACH BOX IS APPROX. 2 CUBIC FEET.

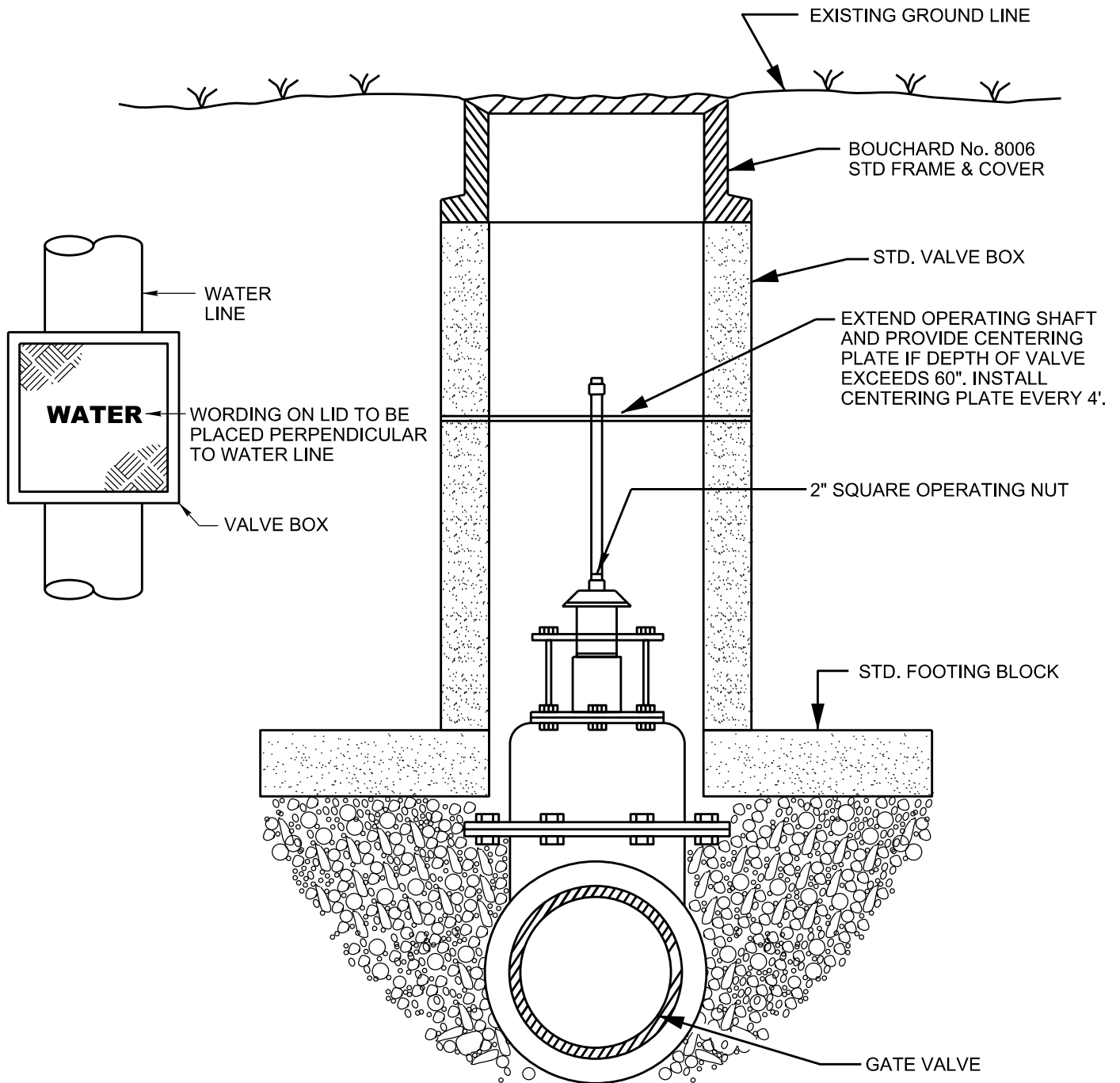


**CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL**

**STANDARD CONCRETE
VALVE BOX**

2\"/>

DRAWING NO. W-03



**CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL**

**TYPICAL VALVE BOX
SETTING**

2" VALVE & LARGER
MARCH, 2016

DRAWING NO. W-04

EXISTING GROUND LINE

EXTEND OPERATING STEM AND
PROVIDE CENTERING PLATE IF
VALVE IS INSTALLED WITH MORE
THAN 60" DEPTH. INSTALL
CENTERING PLATE EVERY 4'.

BUTTERFLY VALVE

STD. FRAME AND COVER

VALVE BOX

STD. FOOTING BLOCK

CRUSHED STONE
BACKFILL

NOTE: THIS DETAIL SHALL APPLY TO 16"
AND LARGER BUTTERFLY VALVES
OR AS SPECIFIED BY THE WSD.



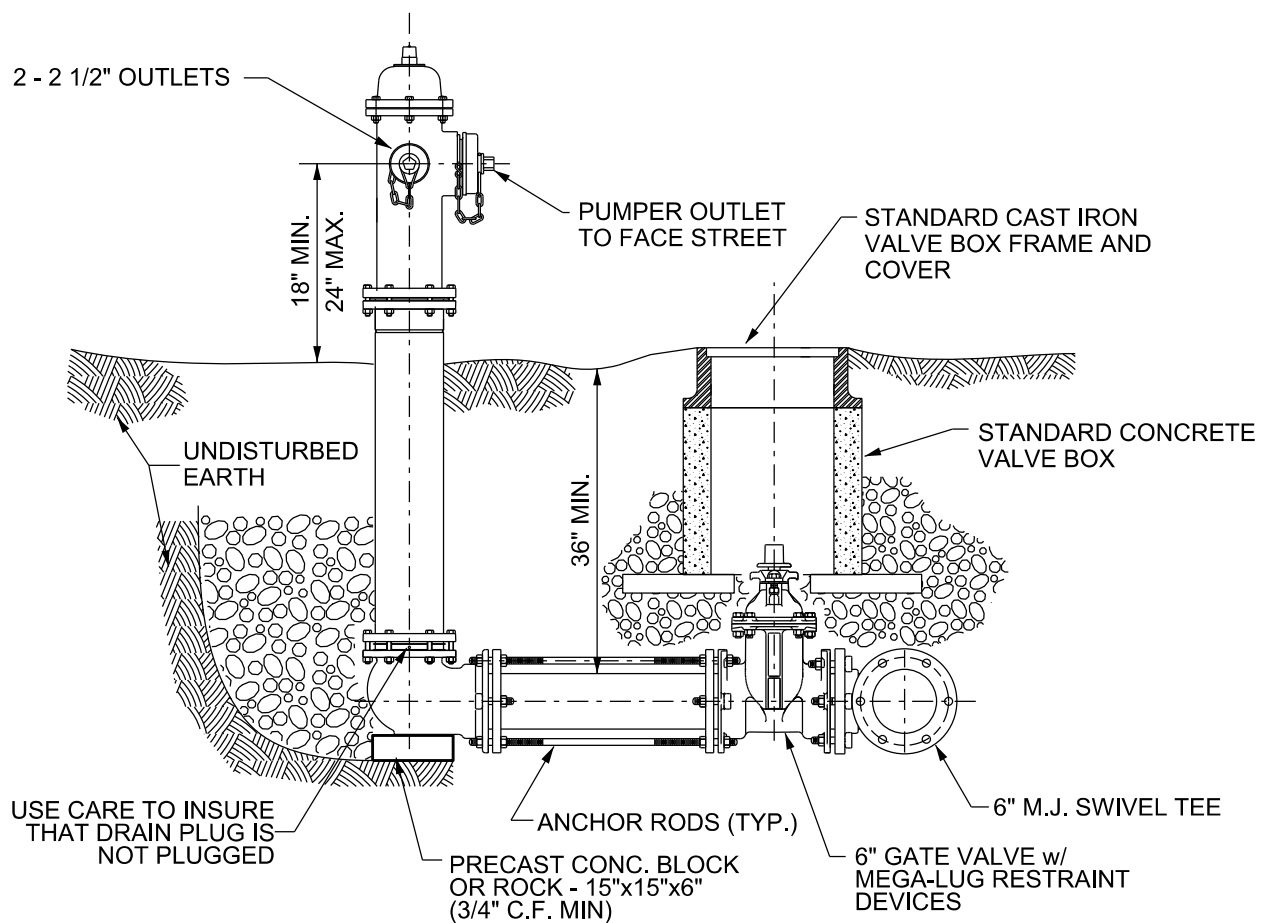
CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL

TYPICAL BUTTERFLY
VALVE - VALVE
BOX SETTING
MARCH, 2016

DRAWING NO. W-05

NOTES:

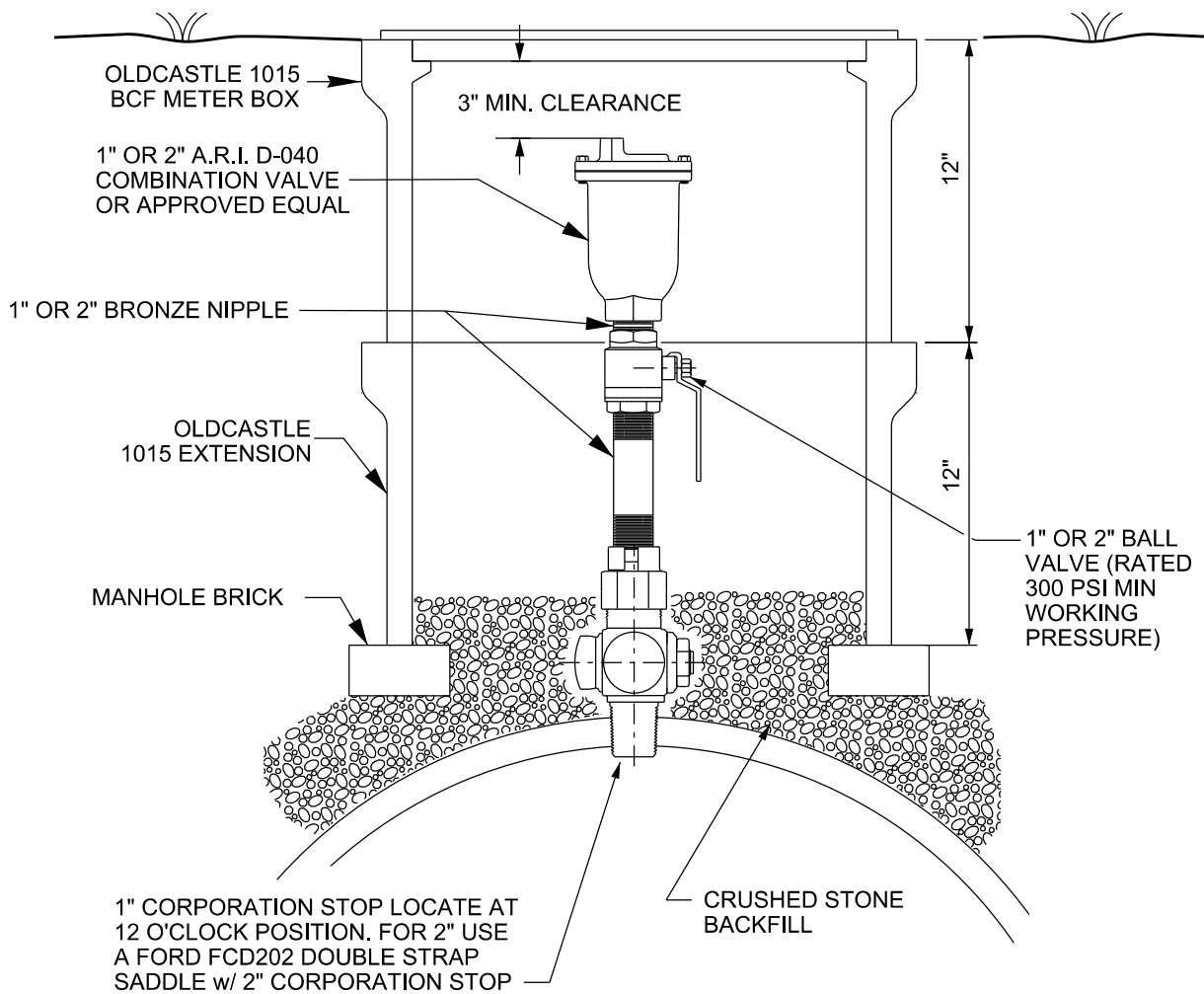
1. HYDRANT SHALL BE SET ON CONCRETE VALVE BOX FOOTING BLOCK. OR POURED CONCRETE (CLASS A)
2. CARE SHALL BE USED TO SET HYDRANT PLUMB. THE FIRE HYDRANT SHALL BE LOCATED NOT LESS THAN 12" OR MORE THAN 18" FROM FACE OF CURB TO FRONT OF HYDRANT.
3. A MINIMUM OF 2 CU. FT. OF CRUSHED STONE SHALL BE PLACED AROUND HYDRANT BASE TO ALLOW FOR DRAINAGE.
4. HYDRANTS TO BE PAINTED PER WSD DIRECTION FOR CITY COLOR CODING OF FIRE HYDRANTS.
5. HYDRANT TEE AND HYDRANT SHOE TO INCLUDE MEGA-LUG RESTRAINT DEVICES.
6. FIRE HYDRANT SHALL NOT SIT CLOSER THAN 5' FROM EDGE OF ANY POWER AND/OR LIGHT POLE.
7. HYDRANT BURY SHALL BE AT LEAST 48" + O.D. IF WATER LINE LOCATED IN ROADWAY AND 36" + O.D. IF LOCATED OUTSIDE ROADWAY.
8. HYDRANT SHALL BE RODDED TO VALVE.
9. HYDRANT SHALL BE MUELLER SUPER CENTURION 250, A-423. THERE IS NO SUBSTITUTE.



**CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL**

**TYPICAL
FIRE HYDRANT**
MARCH, 2016

DRAWING NO. W-06



NOTES:

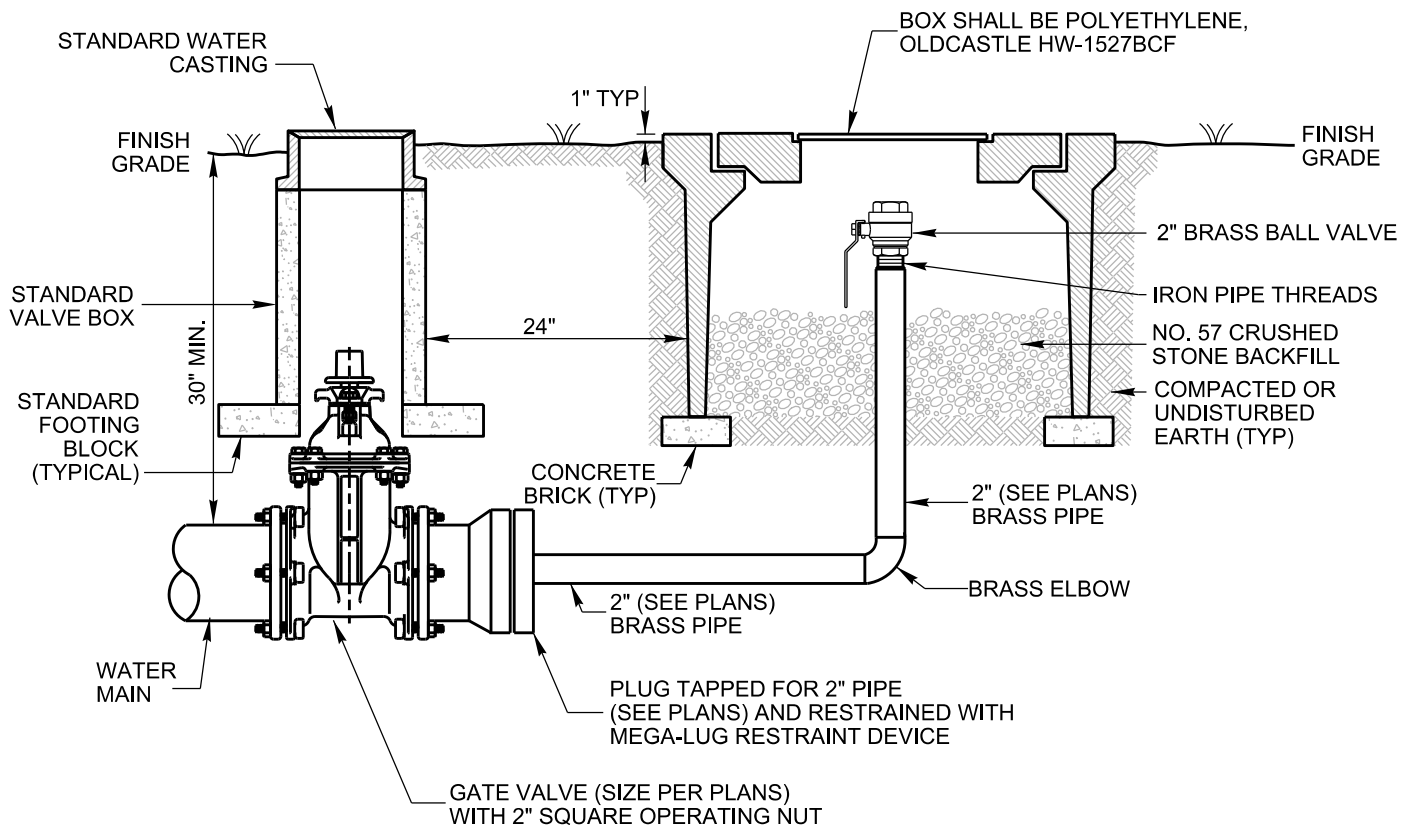
1. ARV TO BE PLACED AT HIGH POINT IN PROFILE OR AS DIRECTED BY WSD
2. BOX SHALL BE OLDCASTLE 1015 METER BOX AND 1015 EXTENSIONS AS NEEDED. PLASTIC COVER WITH CAST IRON VALVE READER.
3. IF PIPE IS LOCATED IN TRAFFIC AREAS, THEN THE ARV ASSEMBLY SHALL BE INSTALLED OUTSIDE TRAFFIC AREAS AND 1" OR 2" TYPE "K" COPPER OR PEXa PIPE SHALL BE RUN TO THE TAP ON THE WATER LINE. 1" OR 2" LINE SHALL BE INSTALLED TO MAINTAIN AN UPHILL GRADIENT TO THE ARV. NO DIPS OR SAGS ARE ALLOWED.



**CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL**

**1" OR 2" AUTOMATIC
COMBINATION
VALVE ASSEMBLY**
MARCH, 2016

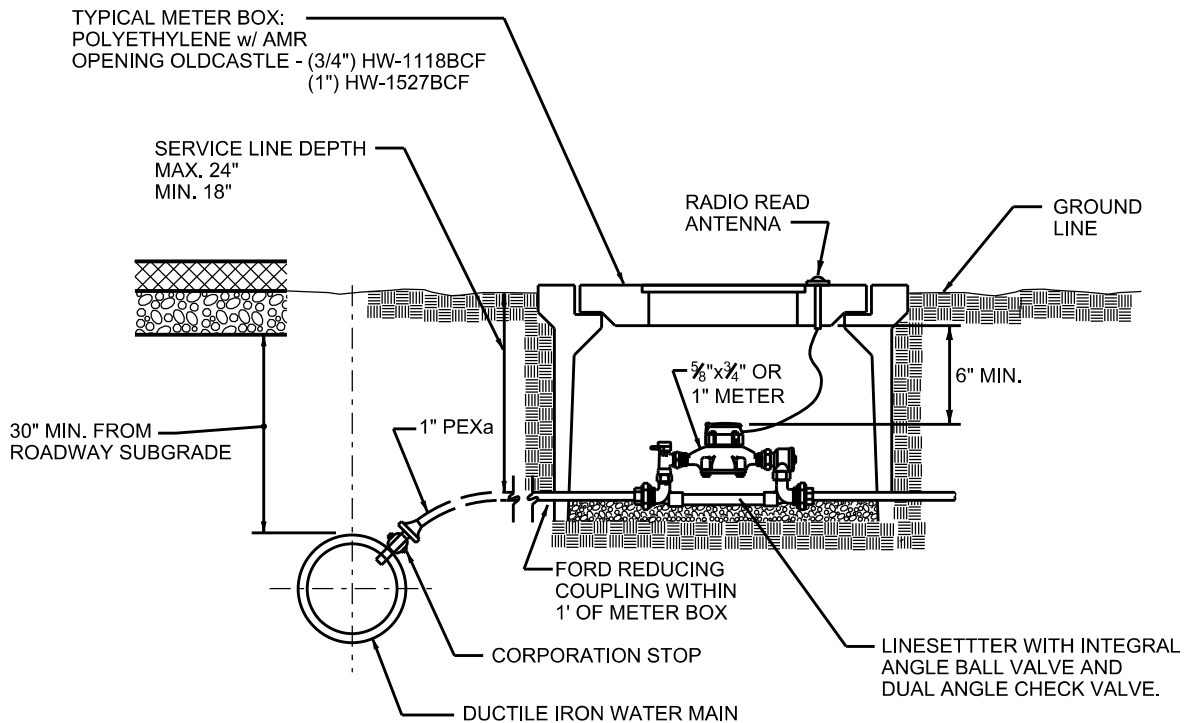
DRAWING NO. W-07



CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL

2"
BELOW - GROUND
BLOW-OFF ASSEMBLY
MARCH, 2016

DRAWING NO. W-08



NOTES:

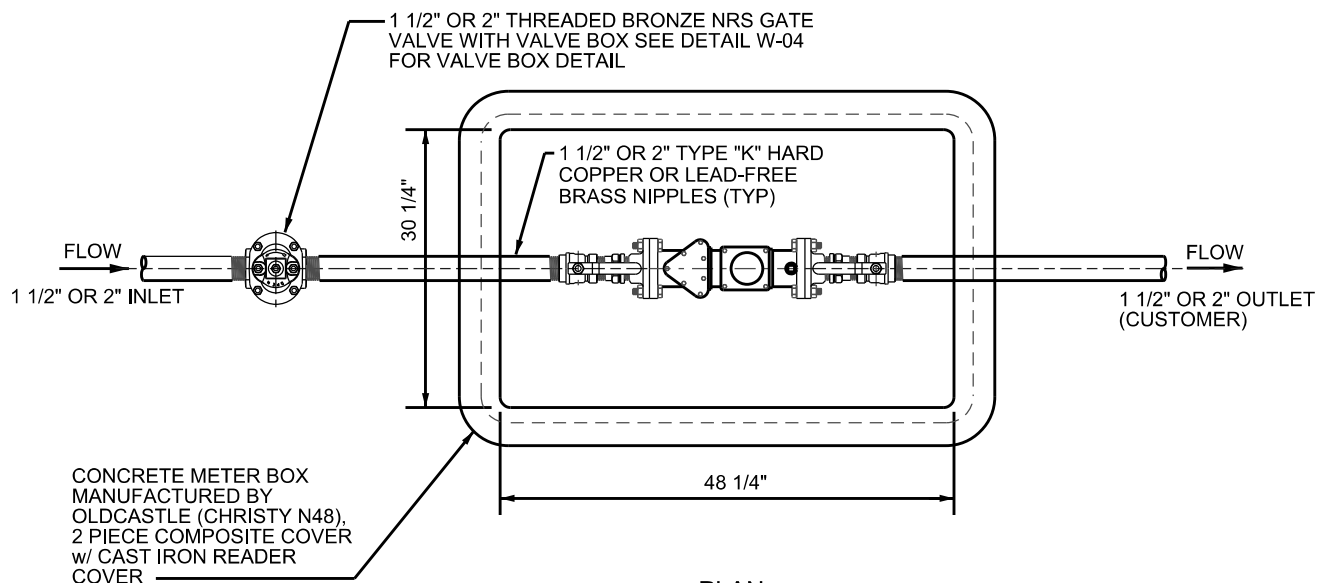
1. FOR TAPS IN PVC PIPE USE TAPPING SADDLE.
NO SADDLE REQUIRED FOR DUCTILE IRON PIPE.
2. PLACE 3" DEEP OF CLEAN $\frac{1}{2}$ " TO $\frac{3}{4}$ "
CRUSHED STONE IN BOTTOM OF METER BOX.
3. PEXa SERVICE TUBING SHALL BE INSTALLED WITH 14 GA.
SOLID STRAND COPPER WIRE. TRACER WIRE SHALL BE
CONNECTED TO THE CORP STOP AND TERMINATED IN
THE METER BOX TO ALLOW FOR CONNECTION TO
DETECTION EQUIPMENT.



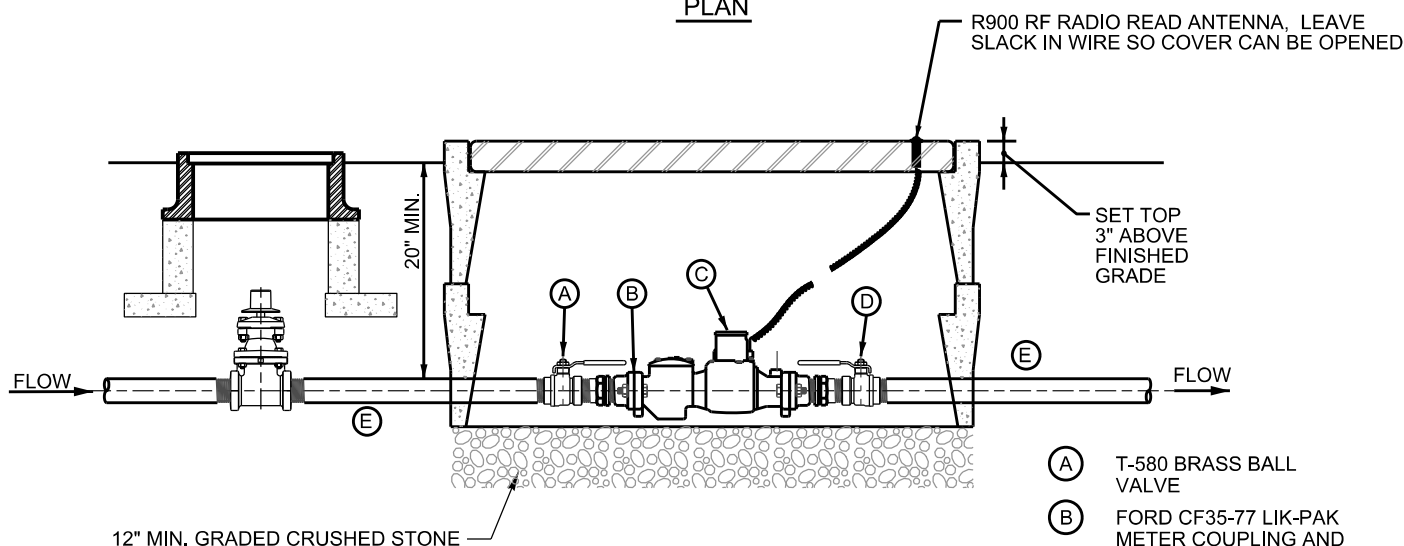
CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL

$\frac{3}{4}$ " OR 1"
SERVICE ASSEMBLY
MARCH, 2016

DRAWING NO. W-09



PLAN



ELEVATION

- (A) T-580 BRASS BALL VALVE
- (B) FORD CF35-77 LIK-PAK METER COUPLING AND
- (C) SENSUS C² COMPOUND METER
- (D) T-580 BRASS BALL VALVE
- (E) BRASS NIPPLE

NOTES:

1. ALL COMPOUND METERS ARE TO BE FOLLOWED BY AN APPROVED BACKFLOW PREVENTER DEVICE.

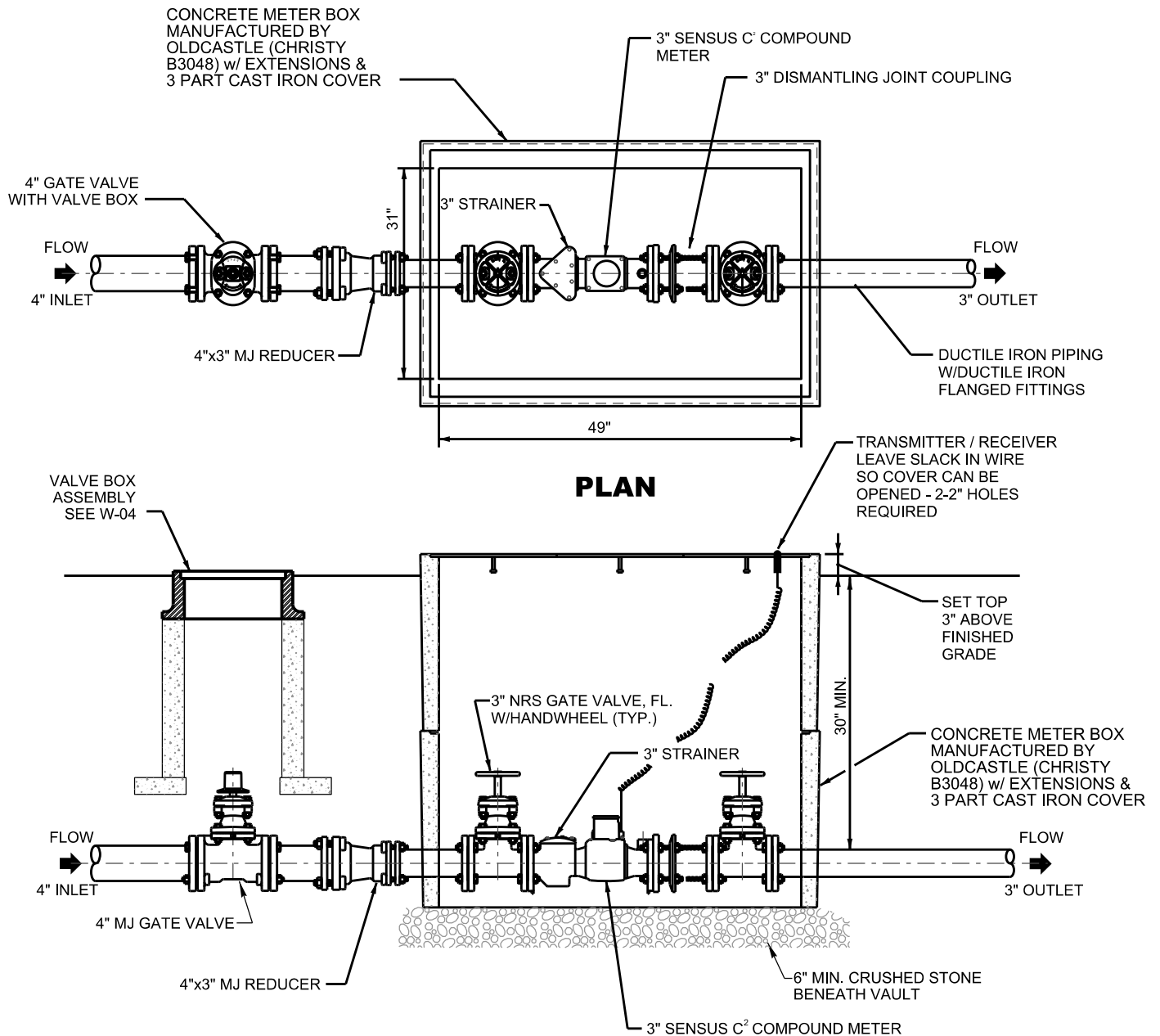
SIZE TO BE 1 1/2" OR 2" AS REQUIRED.
ALL ASSEMBLIES TO BE LEAD FREE BRASS.



**CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL**

**1 1/2" TO 2" COMPOUND
DOMESTIC METER
ASSEMBLY
MARCH, 2016**

DRAWING NO. W-10



NOTES:

1. ALL COMPOUND METERS ARE TO BE FOLLOWED BY AN APPROVED BACKFLOW PREVENTER DEVICE.



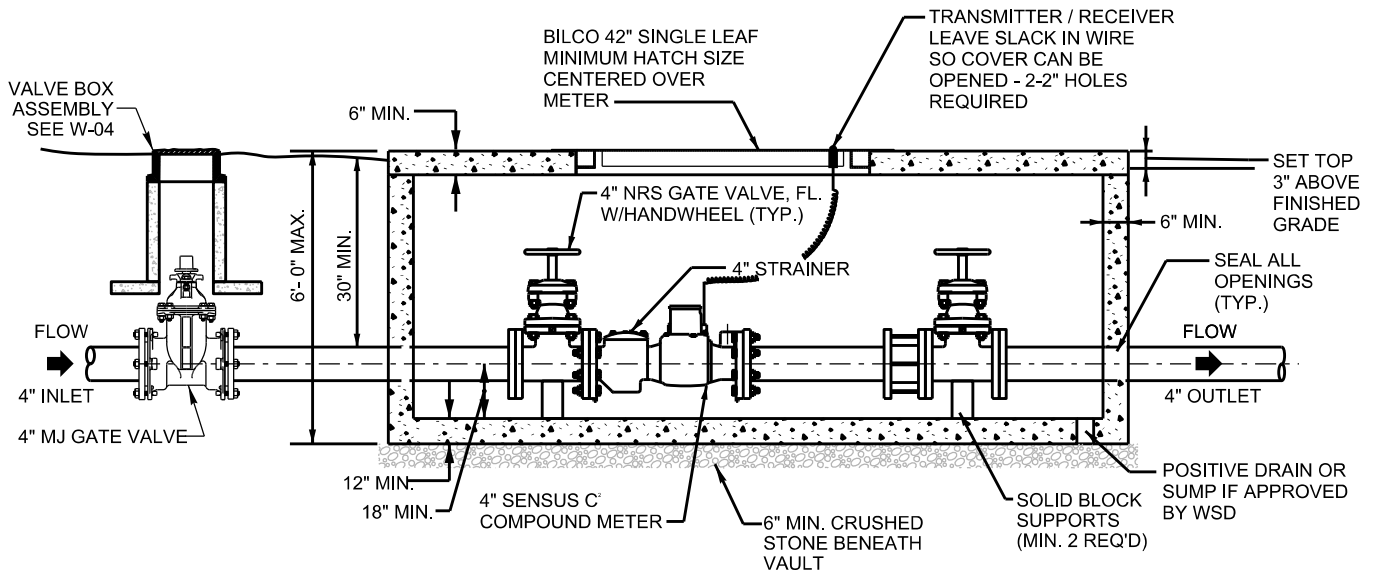
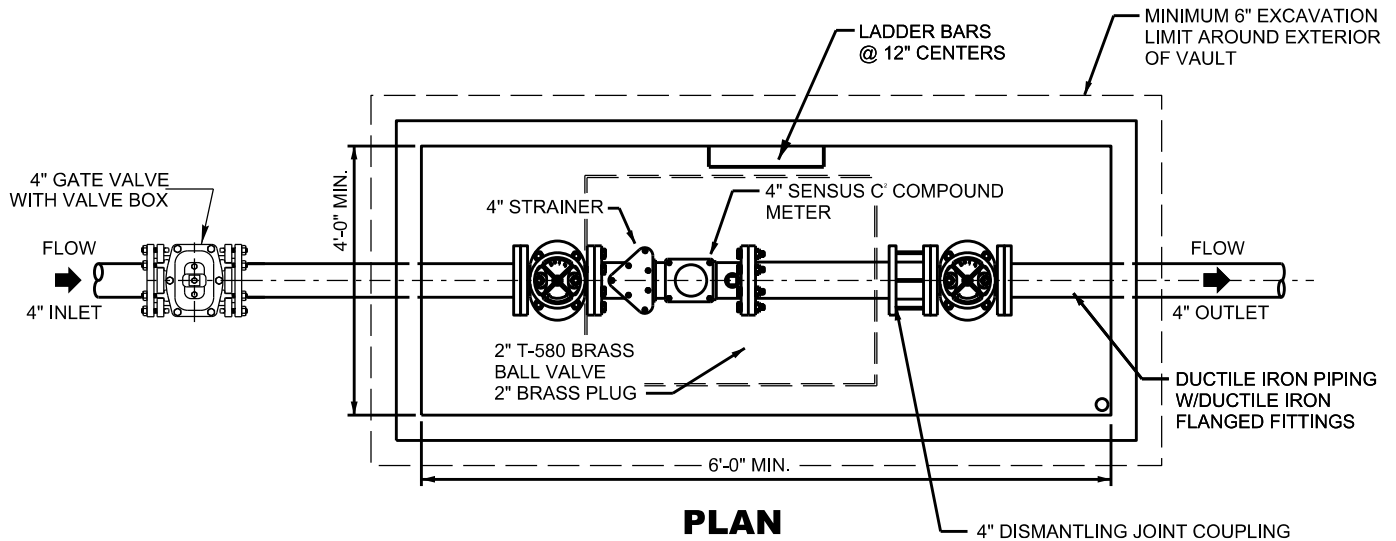
**CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL**

**3" COMPOUND
DOMESTIC METER
ASSEMBLY**
MARCH, 2016

DRAWING NO. W-11

NOTES:

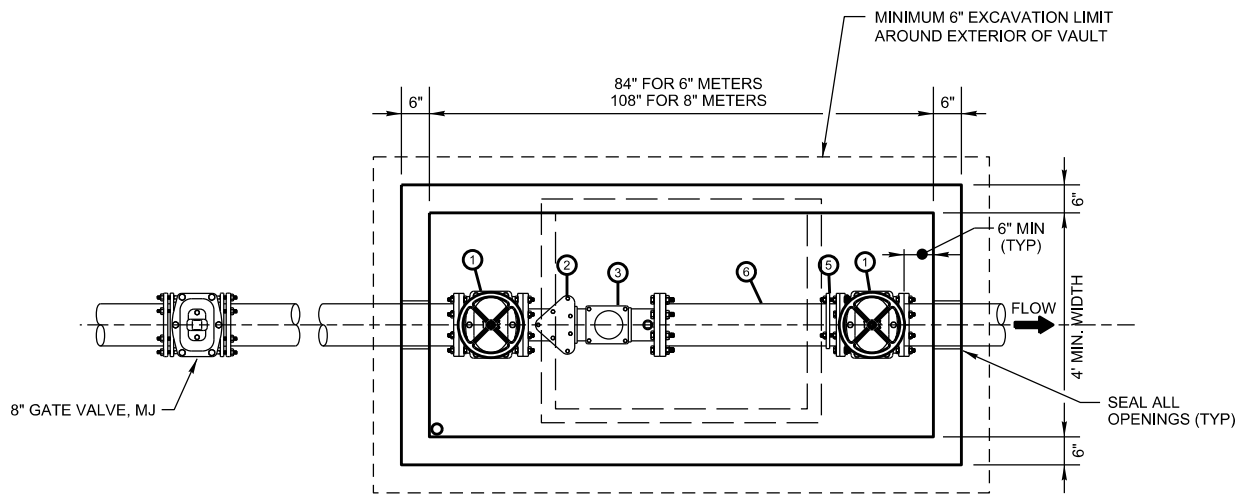
1. ALL COMPOUND METERS ARE TO BE FOLLOWED BY AN APPROVED BACKFLOW PREVENTER DEVICE.
2. LOAD FACTOR DESIGN
3. APPLICABLE DESIGN CODES:
 - AASHTO STANDARD SPECIFICATIONS FOR HWY BRIDGE, 17TH EDITION
 - ASTM C857
4. PRECAST RATED FOR UNIFORM 300PSF
5. CONCRETE COMPRESSIVE STRENGTH @ 28 DAYS = 5000 PSI
6. REINFORCEMENT: ASTM A615, GRADE 60



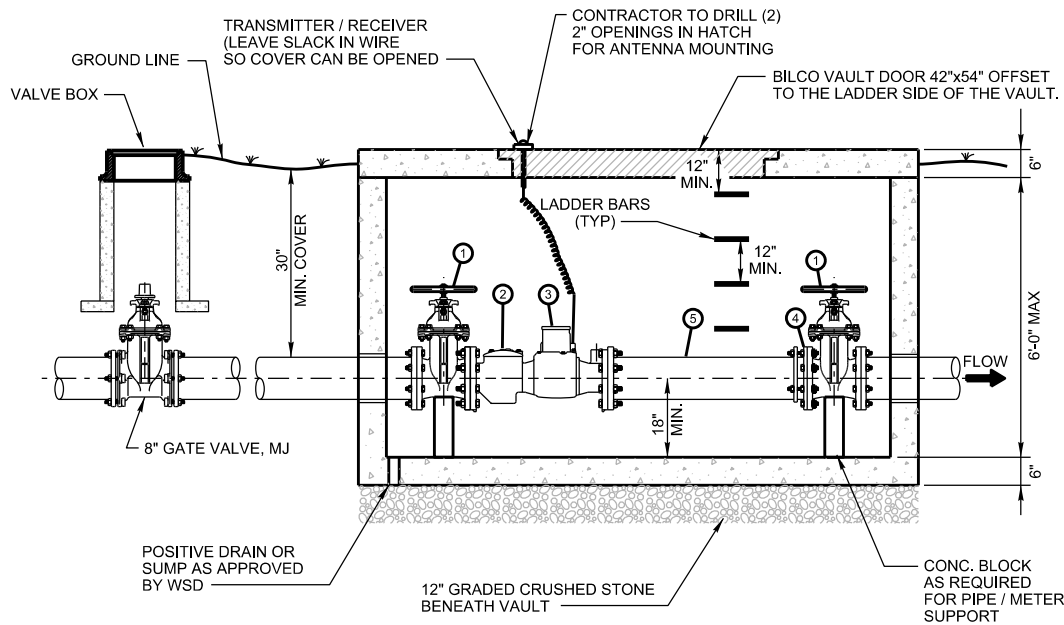
**CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL**

**4" COMPOUND
DOMESTIC METER
ASSEMBLY
MARCH, 2016**

DRAWING NO. W-12



PLAN



ELEVATION

- ① NRS GATE VALVE, FL.
- ② COMPACT STRAINER
- ③ SENSUS C' COMPOUND METER
- ④ FORD STYLE FLANGE COUPLING ADAPTOR w/ SET SCREWS
- ⑤ SPOOL BY PLAIN PIECE. MIN. 10"

NOTES:

1. ALL COMPOUND METERS TO BE IMMEDIATELY FOLLOWED BY AN APPROVED BACKFLOW PREVENTER DEVICE.
2. PRECAST CONCRETE VAULT DESIGN REQUIREMENTS
 - a. MEET ACI 318-11.
 - b. MEET ASTM C857 & AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES.
 - c. PRECAST RATED FOR 300 PSF.
 - d. CONCRETE COMPRESSIVE STRENGTH @ 28 DAYS = 5000 PSI.
 - e. REINFORCEMENT: ASTM A615, GRADE 60
 - f. JOINT SEALANT: BUTYL RUBBER, CONSEAL CS-102 (CONTINUOUS @ EACH JOINT).
 - g. BROOM FINISH ON TOP SLAB EXTERIOR
 - h. PROVIDE 4 LIFTING RINGS PER SLAB TOP
3. HATCH TO BE H-20 LOAD RATED IF VAULT INSTALLED IN SIDEWALK AREA.



**CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL**

**6" OR 8"
COMPOUND METER
ASSEMBLY**
MARCH, 2016

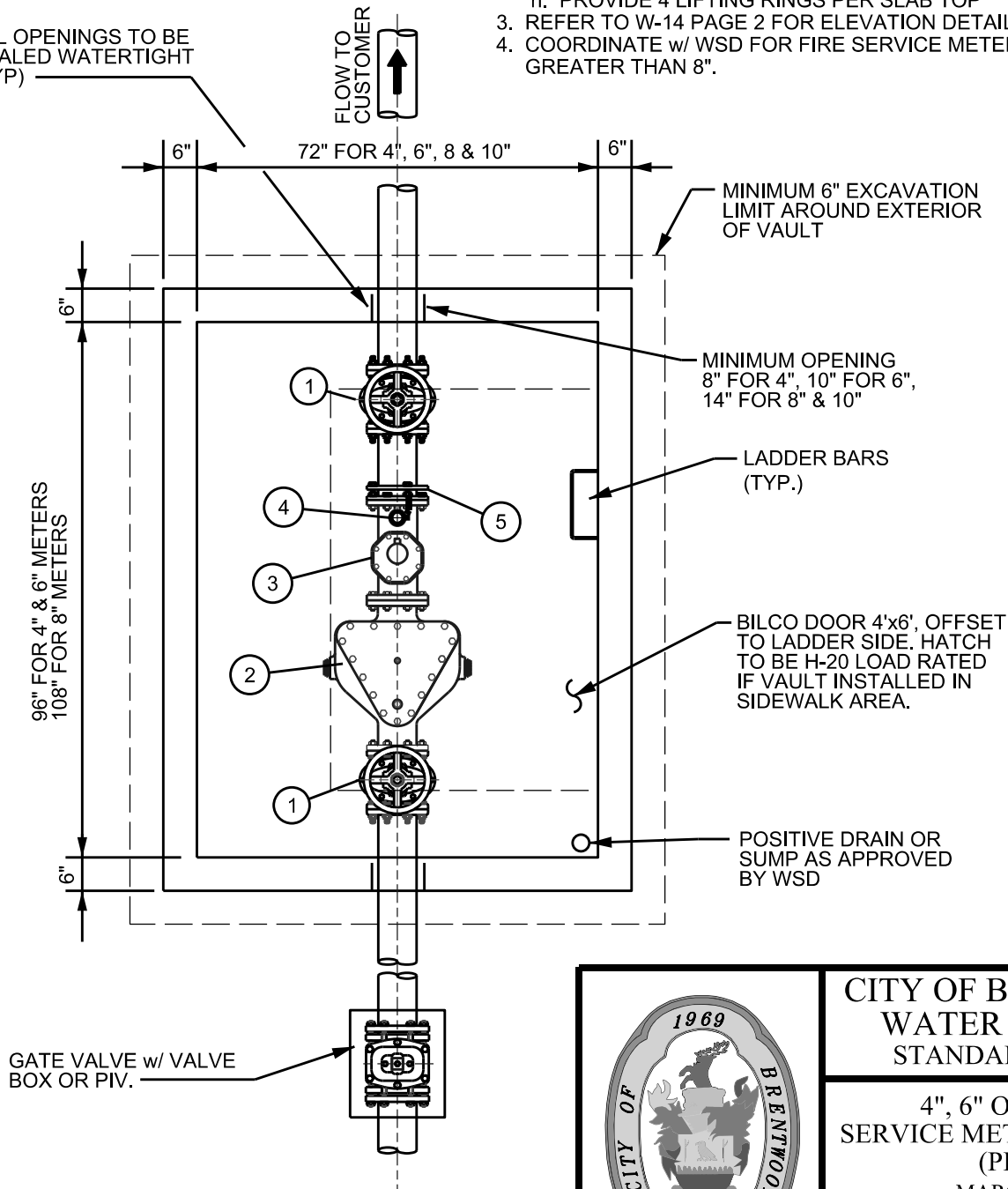
DRAWING NO. W-13

- ① O.S. & Y GATE VALVE, FL.
- ② STRAINER
- ③ SENSUS OMNI F² FIRE SERVICE TURBINE METER, UL / FM RATING
- ④ 2" TEST VALVE
- ⑤ FLANGE COUPLING ADAPTOR

NOTES:

1. ALL FIRE METERS TO BE IMMEDIATELY FOLLOWED BY A DOUBLE CHECK VALVE ASSEMBLY.
2. PRECAST CONCRETE VAULT DESIGN REQUIREMENTS
 - a. MEET ACI 318-11.
 - b. MEET ASTM C857 & AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES.
 - c. PRECAST RATED FOR 300 PSF.
 - d. CONCRETE COMPRESSIVE STRENGTH @ 28 DAYS = 5000 PSI.
 - e. REINFORCEMENT: ASTM A615, GRADE 60
 - f. JOINT SEALANT: BUTYL RUBBER, CONSEAL CS-102 (CONTINUOUS @ EACH JOINT).
 - g. BROOM FINISH ON TOP SLAB EXTERIOR
 - h. PROVIDE 4 LIFTING RINGS PER SLAB TOP
3. REFER TO W-14 PAGE 2 FOR ELEVATION DETAILS OF METER.
4. COORDINATE w/ WSD FOR FIRE SERVICE METER ASSEMBLIES GREATER THAN 8".

ALL OPENINGS TO BE SEALED WATERTIGHT (TYP)



PLAN



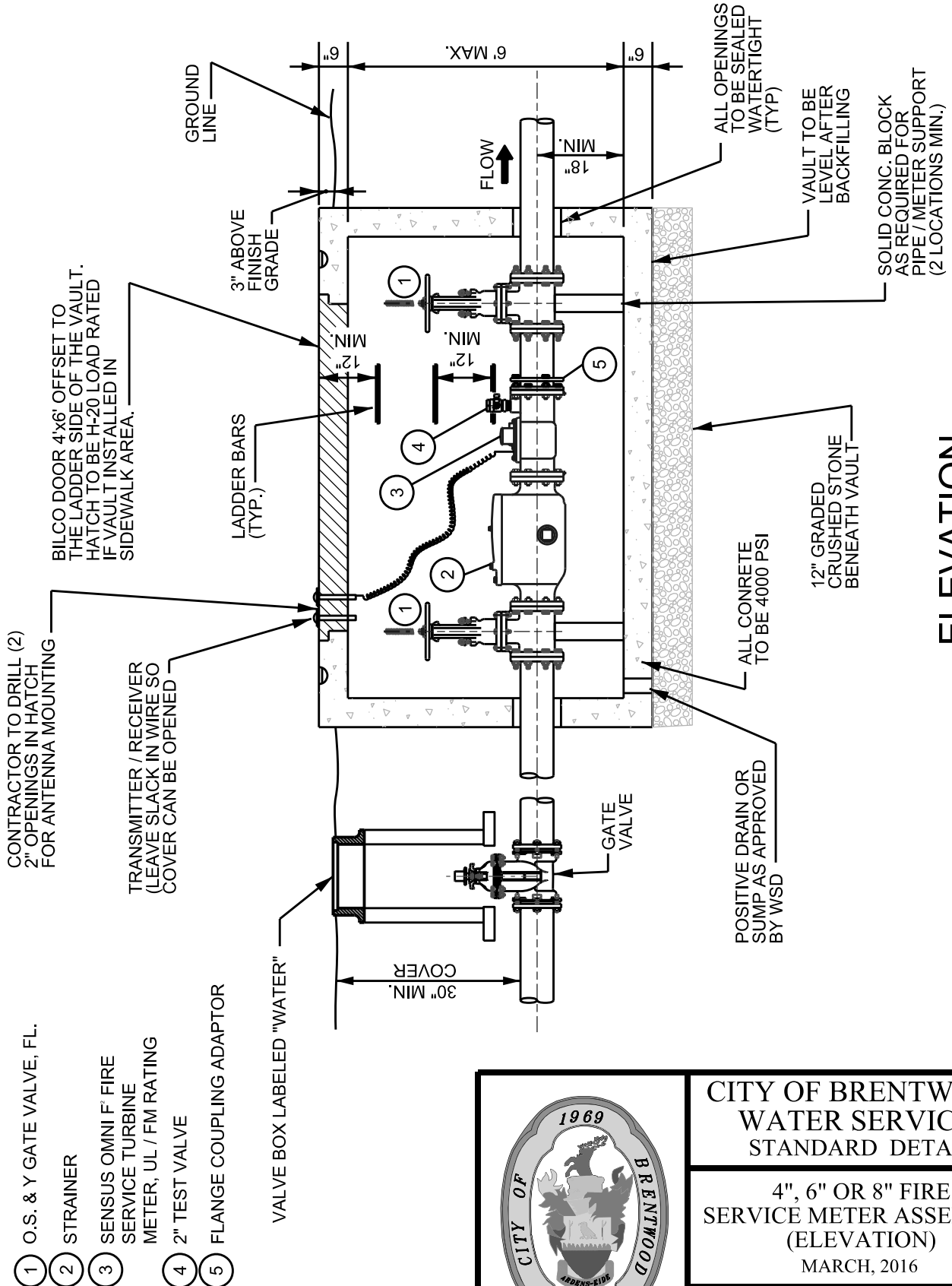
**CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL**

**4", 6" OR 8" FIRE
SERVICE METER ASSEMBLY
(PLAN)**

MARCH, 2016

DRAWING NO. W-14

PAGE 1 OF 2



ELEVATION



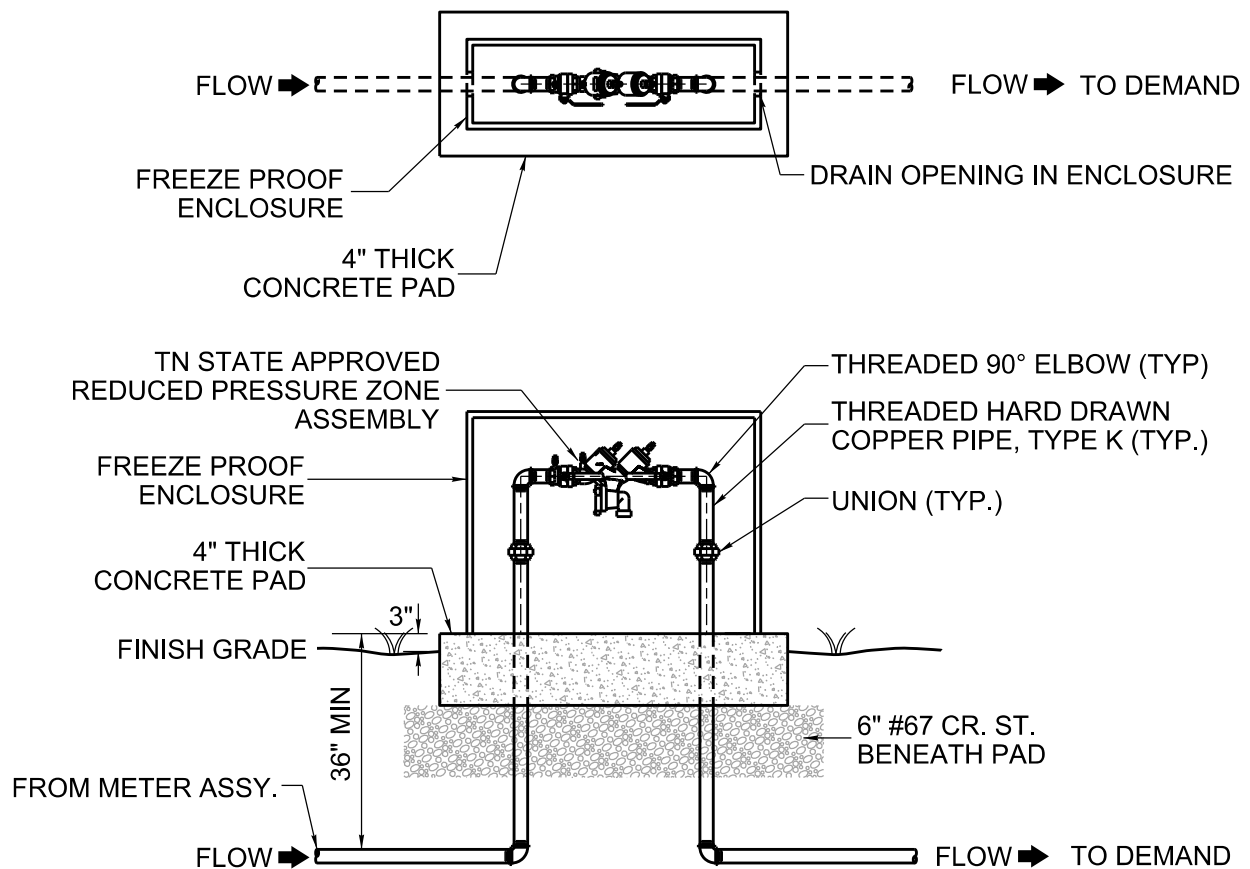
CITY OF BRENTWOOD WATER SERVICES STANDARD DETAIL

4", 6" OR 8" FIRE
SERVICE METER ASSEMBLY
(ELEVATION)

MARCH, 2016

DRAWING NO. W-14

PAGE 2 OF 2



NOTES:

1. BACKFLOW DEVICE SHALL BE INSTALLED AT PROPERTY LINE OR IN ACCESSIBLE LOCATION AS APPROVED BY THE BRENTWOOD WATER & SEWER DEPARTMENT.
2. NO CONNECTIONS ALLOWED BETWEEN METER AND BACKFLOW PREVENTER.
3. CONCRETE PAD IS OPTIONAL FOR RESIDENTIAL USES.

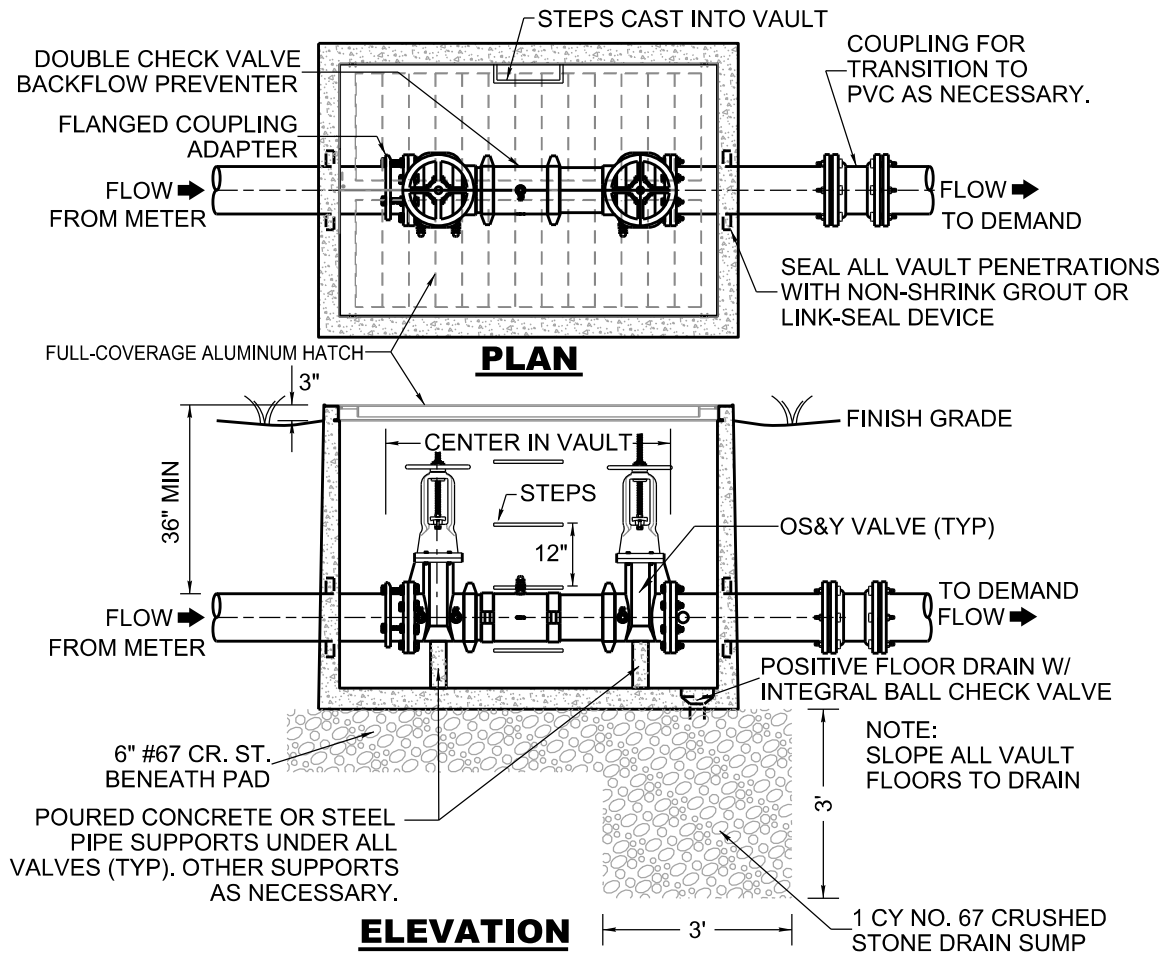


CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL

$\frac{3}{4}$ " TO 2" REDUCED
PRESSURE ZONE BACKFLOW
PREVENTER ASSEMBLY

MARCH, 2016

DRAWING NO. W-15



NOTES:

1. BACKFLOW DEVICES SHALL BE INSTALLED AT PROPERTY LINE OR IN ACCESSIBLE LOCATION APPROVED BY BRENTWOOD WATER AND SEWER DEPARTMENT.
2. TN STATE APPROVED BACKFLOW DEVICES MAY BE SUBSTITUTED FOR WATTS DEVICES.
3. PROVIDE A REINFORCED ALUMINUM PLATE HATCH COVER IN 2 OR 3 PIECES.

SIZE	BACKFLOW PREVENTER	VAULT	FLANGED COUPLING ADAPTER
4"	WATTS 757DCDA-OSY	60"x 48" (PRECAST CONCRETE)	SMITH-BLAIR #912 OR FORD FFCA STYLE
6"	WATTS 757DCDA-OSY	72"x 48" (PRECAST CONCRETE)	SMITH-BLAIR #912 OR FORD FFCA STYLE
8"	WATTS 757DCDA-OSY	72"x 48" (PRECAST CONCRETE)	SMITH-BLAIR #912 OR FORD FFCA STYLE



**CITY OF BRENTWOOD
 WATER SERVICES
 STANDARD DETAIL**

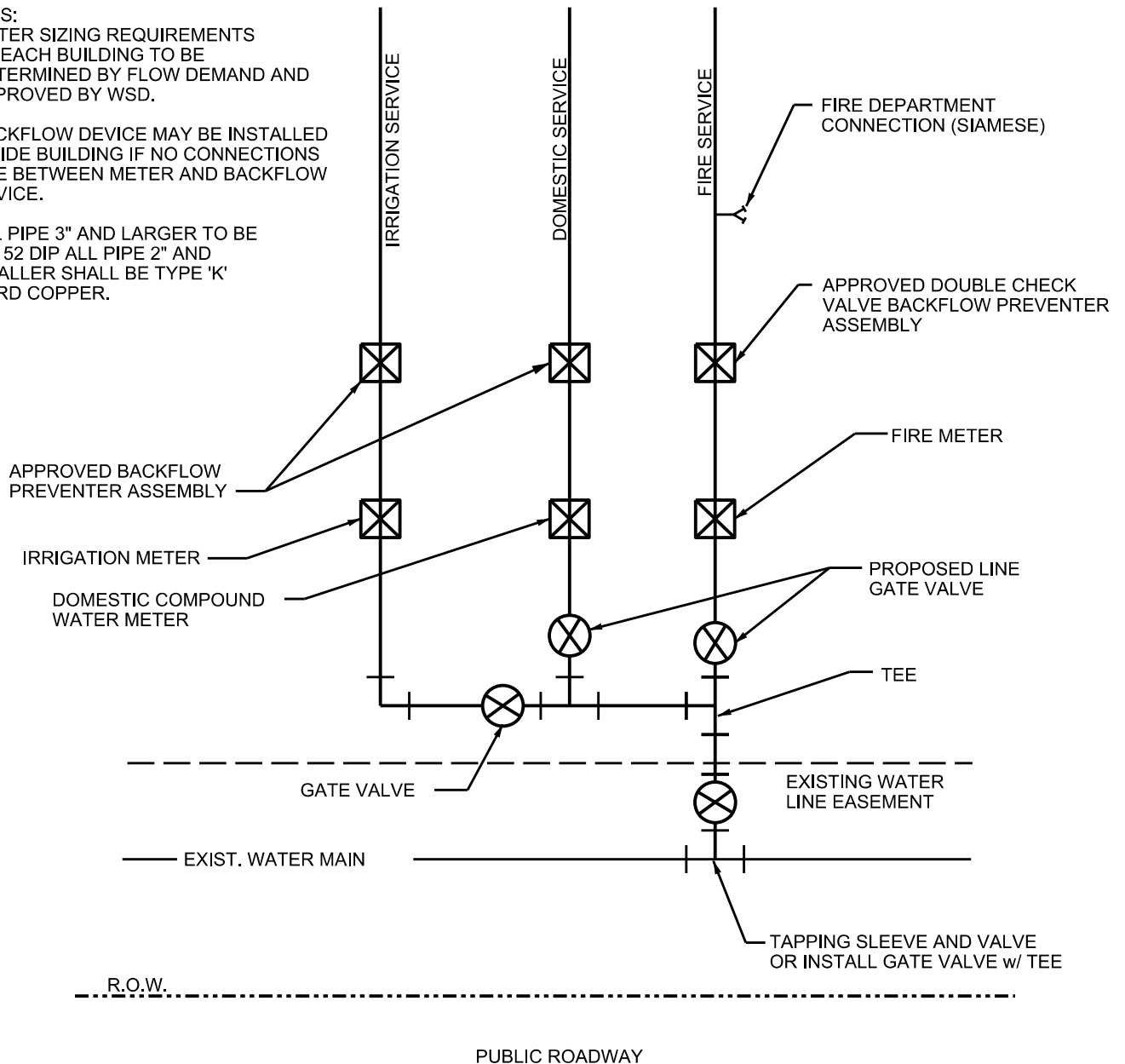
**4", 6" OR 8" DOUBLE
 CHECK VALVE BACKFLOW
 PREVENTER ASSEMBLY**

MARCH, 2016

DRAWING NO. W-16

NOTES:

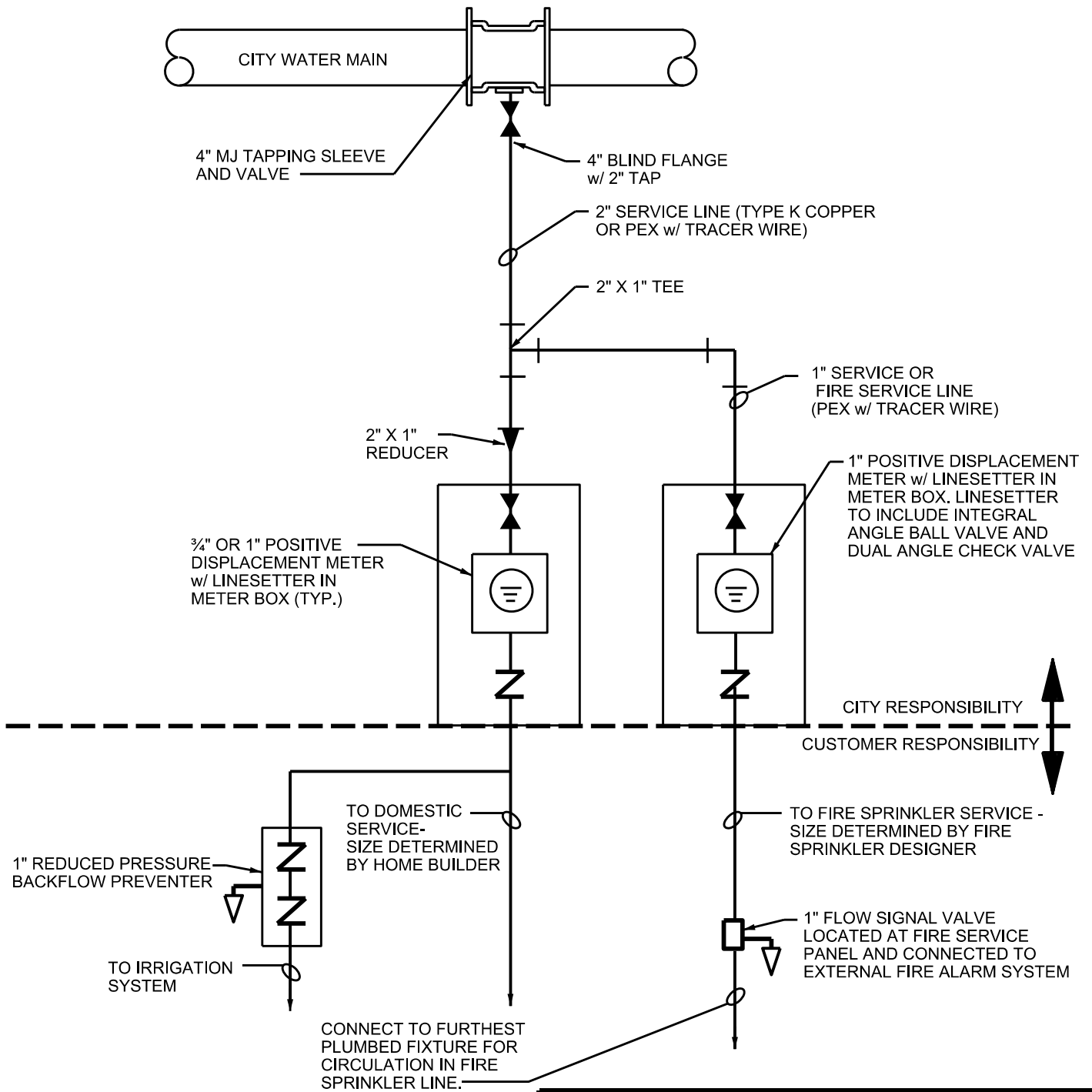
1. METER SIZING REQUIREMENTS OF EACH BUILDING TO BE DETERMINED BY FLOW DEMAND AND APPROVED BY WSD.
2. BACKFLOW DEVICE MAY BE INSTALLED INSIDE BUILDING IF NO CONNECTIONS ARE BETWEEN METER AND BACKFLOW DEVICE.
3. ALL PIPE 3" AND LARGER TO BE CL. 52 DIP ALL PIPE 2" AND SMALLER SHALL BE TYPE 'K' HARD COPPER.



CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL

TYPICAL METERING SCHEMATIC
FOR COMBINED COMMERCIAL,
DOMESTIC, FIRE SERVICE,
AND IRRIGATION SERVICE
MARCH, 2016

DRAWING NO. W-17



CITY OF BRENTWOOD WATER SERVICES STANDARD DETAIL

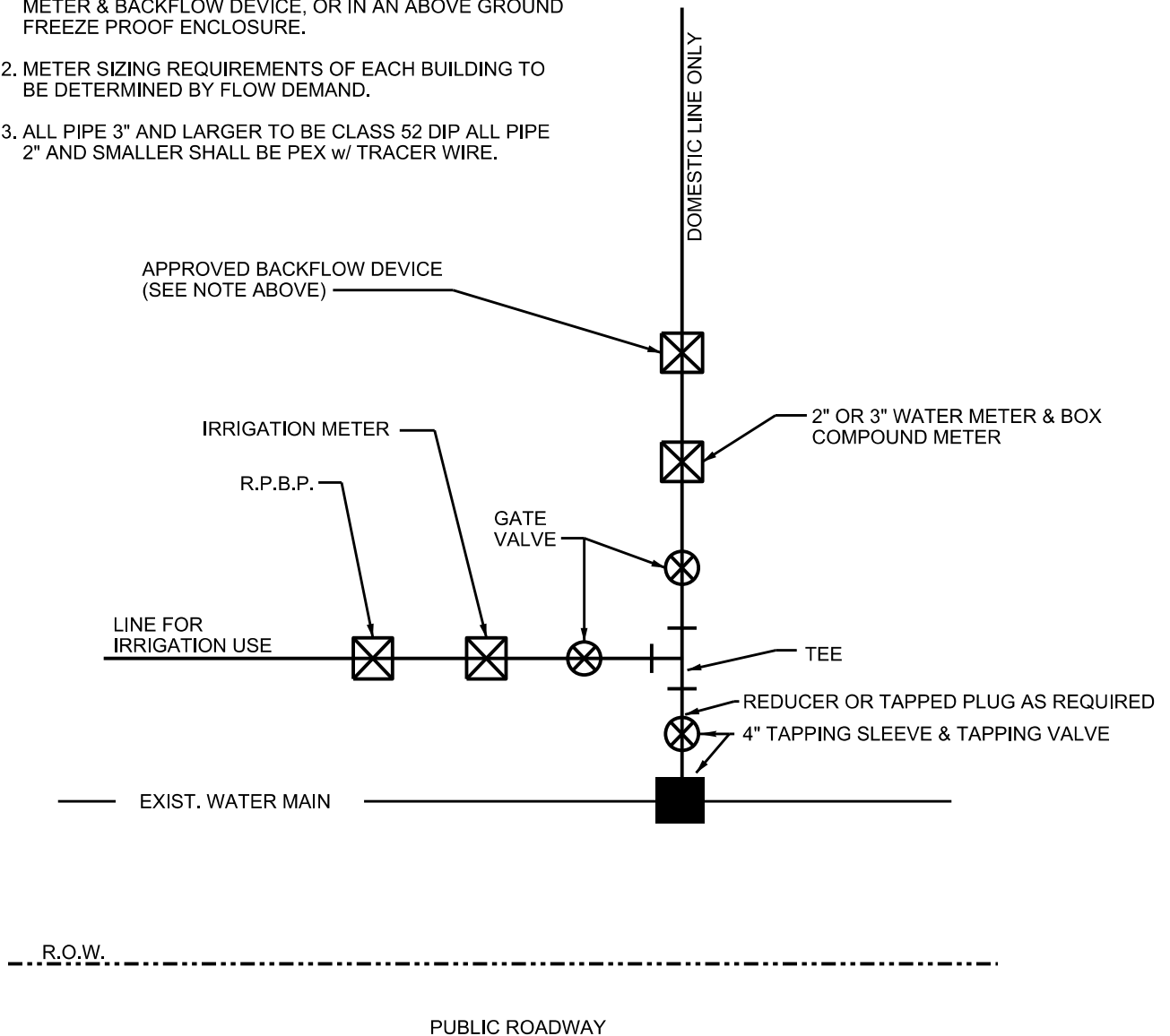
TYPICAL COMBINATION
RESIDENTIAL & FIRE SPRINKLER
WATER SERVICE SCHEMATIC FOR
NEW SERVICE INSTALLATIONS

MARCH, 2016

DRAWING NO. W-18

NOTES:

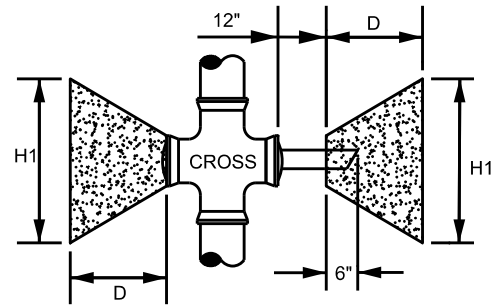
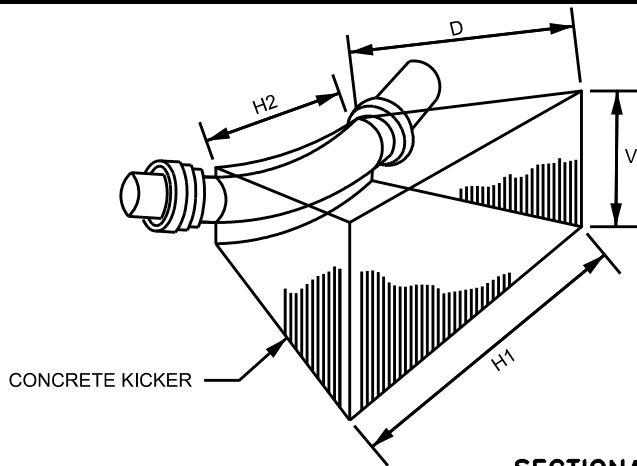
1. BACKFLOW DEVICE MAY BE INSTALLED EITHER INSIDE BUILDING IF NO TEES OR CONNECTIONS ARE BETWEEN METER & BACKFLOW DEVICE, OR IN AN ABOVE GROUND FREEZE PROOF ENCLOSURE.
2. METER SIZING REQUIREMENTS OF EACH BUILDING TO BE DETERMINED BY FLOW DEMAND.
3. ALL PIPE 3" AND LARGER TO BE CLASS 52 DIP ALL PIPE 2" AND SMALLER SHALL BE PEX w/ TRACER WIRE.



**CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL**

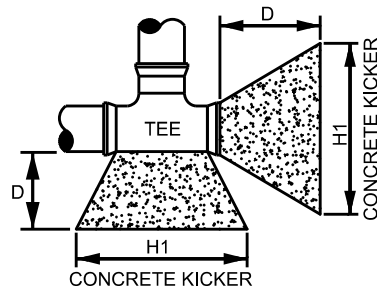
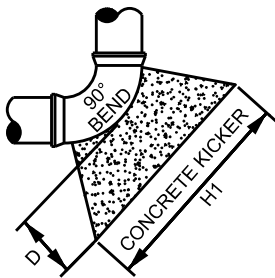
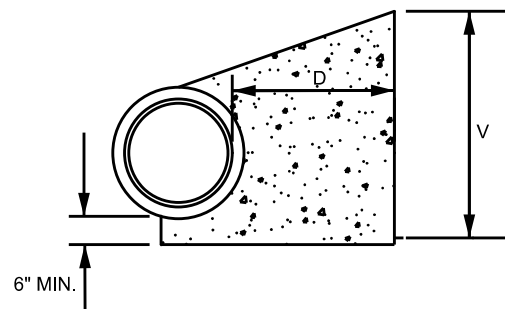
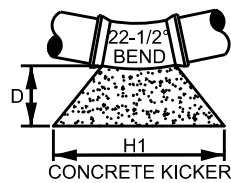
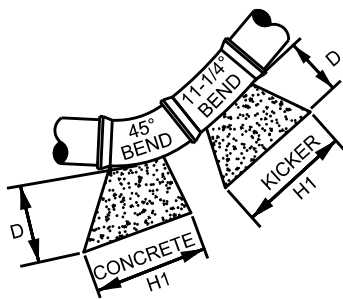
**TYPICAL 2" OR 3" COMMERCIAL,
DOMESTIC, AND IRRIGATION
SERVICE SCHEMATIC WITHOUT
FIRE SERVICE**
MARCH, 2016

DRAWING NO. W-19



PLUG PIECE OF 6" PIPE TO BE USED ONLY WHEN SPECIFIED ON LAYOUT SHEET

SECTIONAL VIEW TEES, CROSSES, & BENDS



TAPPING SLEEVES TEES, CROSSES & PLUGS					90° BENDS					45° BENDS					22½° BENDS					11¼° BENDS					PIPE SIZE
H1	H2	V	D	C. F.	H1	H2	V	D	C. F.	H1	H2	V	D	C. F.	H1	H2	V	D	C. F.	H1	H2	V	D	C. F.	
24"	12"	12"	18"	2.25	24"	12"	12"	18"	2.25	18"	8"	12"	18"	1.60	18"	8"	12"	18"	1.60	18"	8"	12"	18"	1.60	3" & 4"
24"	16"	18"	18"	3.50	30"	16"	18"	18"	4.05	24"	10"	16"	18"	3.20	24"	10"	16"	18"	3.20	24"	10"	16"	18"	3.20	6"
36"	18"	18"	18"	5.05	39"	18"	24"	18"	7.30	30"	12"	18"	18"	3.95	24"	12"	18"	18"	3.95	24"	12"	16"	18"	3.40	8"
48"	24"	18"	24"	7.15	54"	32"	24"	18"	10.25	36"	18"	21"	18"	4.60	24"	18"	21"	18"	4.60	24"	18"	21"	18"	4.60	10"
54"	30"	24"	24"	13.40	54"	36"	24"	18"	18.15	42"	18"	24"	24"	9.60	24"	18"	24"	24"	6.60	24"	18"	21"	24"	6.10	12"
66"	34"	36"	24"	22.50	69"	48"	48"	24"	29.00	48"	30"	36"	24"	17.00	36"	30"	27"	24"	11.80	27"	24"	27"	24"	9.10	16"

NOTES:

1. RESTRAINED JOINT PIPE AND FITTINGS IS THE STANDARD REQUIREMENT OF WSD.
2. THIS DETAIL IS ONLY APPLICABLE WHEN RESTRAINED JOINT PIPE AND FITTINGS CANNOT BE UTILIZED AND WHEN APPROVED BY WSD.
3. THRUST BLOCKS ARE REQUIRED AT ALL TAPPING TEES.
4. THRUST BLOCKS MAY BE REQUIRED IN OTHER LOCATIONS WHERE DIRECTED BY THE WATER AND SEWER DEPARTMENT.
5. CONCRETE FOR THRUST BLOCKS SHALL HAVE 4000 PSI COMPRESSIVE STRENGTH.
6. THRUST BLOCKS SHALL NOT BE POURED IN WET OR FROZEN GROUND.
7. THRUST BLOCKS SHALL BEAR AGAINST UNDISTURBED MATERIAL.
8. PLASTIC SHEETING SHALL BE PROVIDED AT FITTINGS SO AS TO PREVENT COVERING ANCHOR BOLTS WITH CONCRETE.

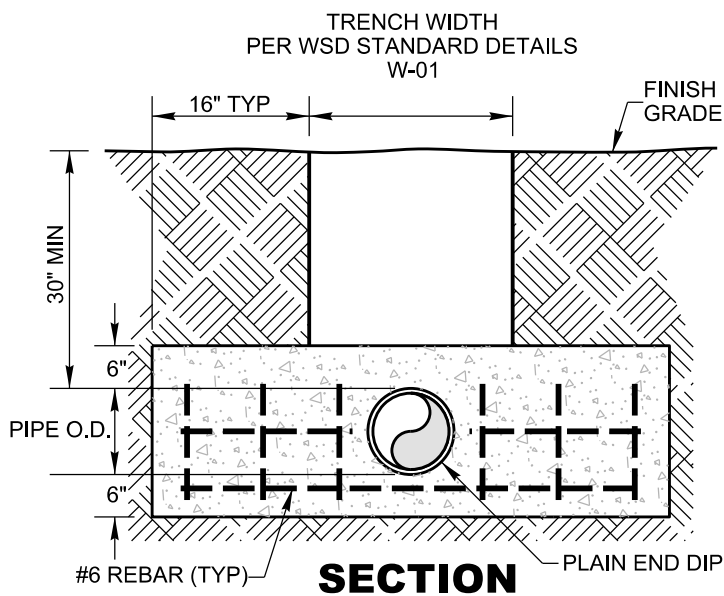


CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL

TYPICAL CONCRETE
THRUST BLOCK

MARCH, 2016

DRAWING NO. W-20



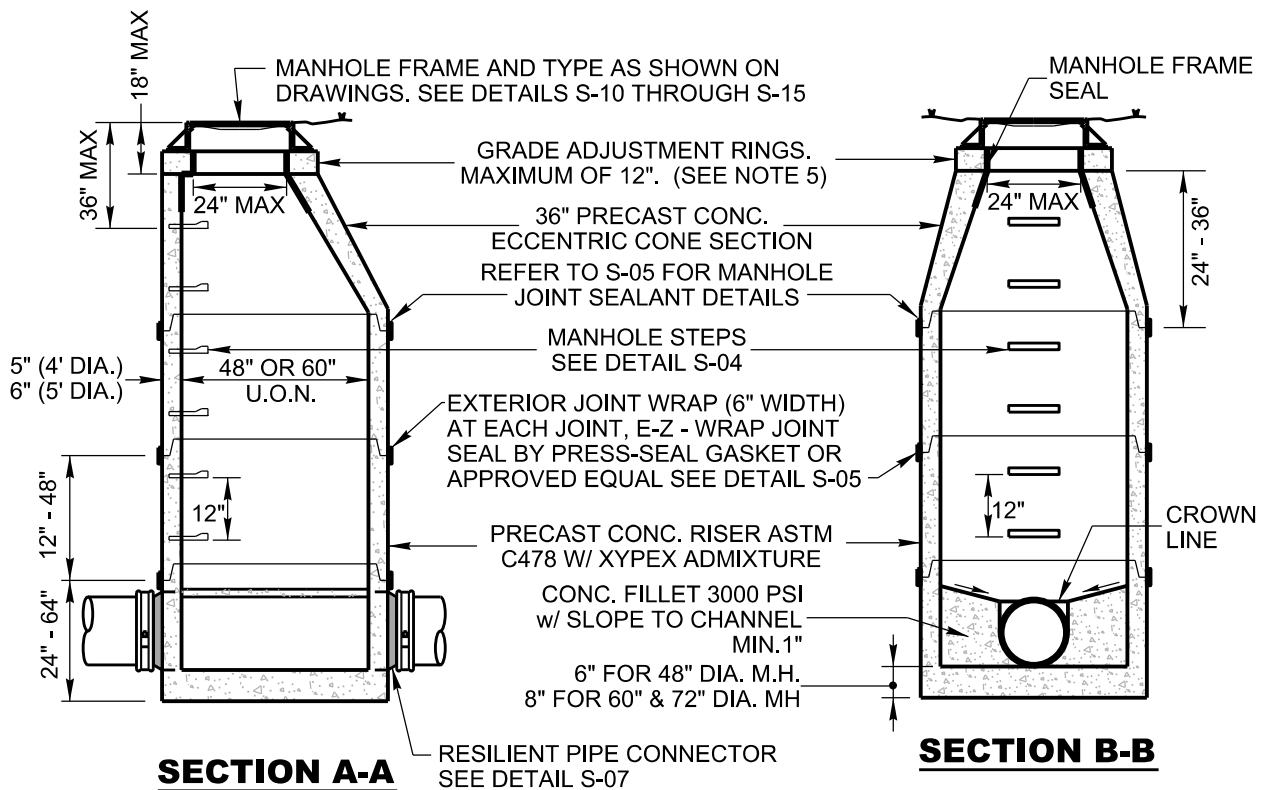
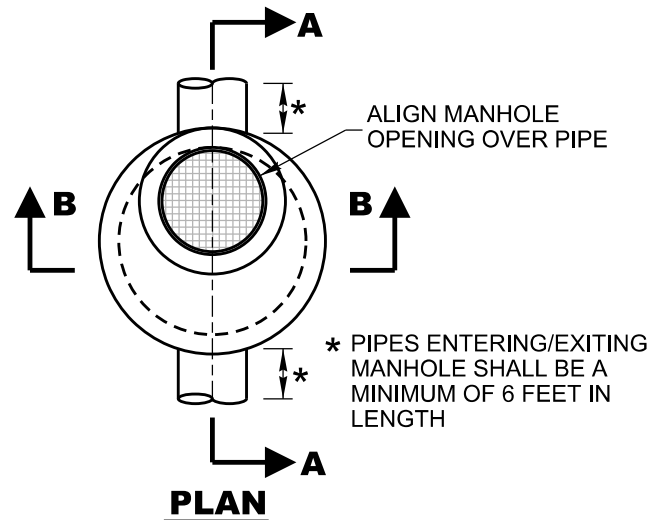
1. ANCHOR BLOCK CONCRETE SHALL BE 4000 PSI
2. ALL STEEL RODS, BOLTS, TIES, ETC. IN CONTACT WITH SOIL SHALL BE COATED WITH TNEMEC HB TNEMECOL OR EQUAL OR BE STAINLESS STEEL.
3. CONCRETE SHALL BE POURED AGAINST UNDISTURBED EARTH
4. DIMENSIONS ARE BASED ON 2000 P.S.F. SOIL BEARING CAPACITY PRESSURE AND 6000 LB. REINFORCING BAR TENSILE STRENGTH



DRAWING NO. W-21

NOTES:

1. DO NOT USE GRADE RINGS WHERE MH EXTENDS ABOVE GRADE.
2. PLACE 2 STRIPS OF BUTYL RUBBER SEALANT BETWEEN TOP OF CONCRETE AND BOTTOM OF MANHOLE FRAME. GROUT FRAME AND COVER TO MANHOLE.
3. ALL PRECAST MANHOLE SEGMENTS TO MEET REQUIREMENTS OF ASTM C478
4. WHERE GRADE ADJUSTMENT IS DONE, A MANHOLE FRAME SEAL SHALL BE PROVIDED.
5. MANHOLE 4.1' TO 12' TO BE 48" DIAMETER. MANHOLE 12.1' TO 18' TO BE 60" DIAMETER.



**CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL**

**TYPICAL SANITARY
SEWER MANHOLE**

MARCH, 2016

DRAWING NO. S-01

MANHOLE FRAME AND TYPE
AS SHOWN ON DRAWINGS.
SEE DETAIL S-10 THROUGH S-15

DO NOT USE GRADE RINGS
WHERE MH EXTENDS ABOVE
GRADE

GRADE ADJUSTMENT
RING, MAXIMUM OF 12"

PAVEMENT

GRADE

VARIES (AS REQUIRED) SEE NOTE 3

28" OR 36"

12" - 48"

14"

78" MIN.

8"

27"

8"

27"

8"

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27"

FLAT TOP PRECAST
SECTION

MH STEPS
SEE DETAIL
S-04

48" DIA.

5" (TYP)

RESILIENT PIPE CONNECTOR.
REFER TO DETAIL S-07

72" DIA

7" (TYP)

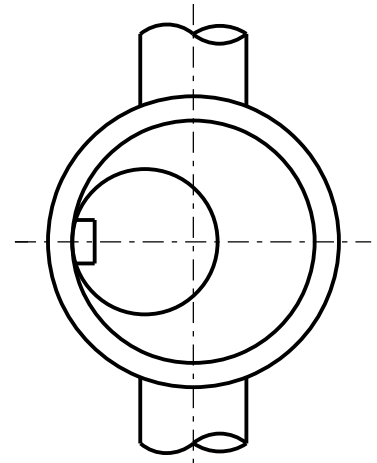
OPENINGS FOR PIPE CAST AS REQUIRED

CONCRETE INVERT AS REQUIRED

4"

8"

REFER TO DETAIL S-05
FOR JOINT SEALANT



PLAN

NOTES:

- 1) REINFORCING EQUAL TO
ASTM-C478 SPECIFICATIONS
- 2) CONCRETE TO HAVE
XYPEX ADMIXTURE
- 3) USE FOR MANHOLES 18.1'
AND DEEPER

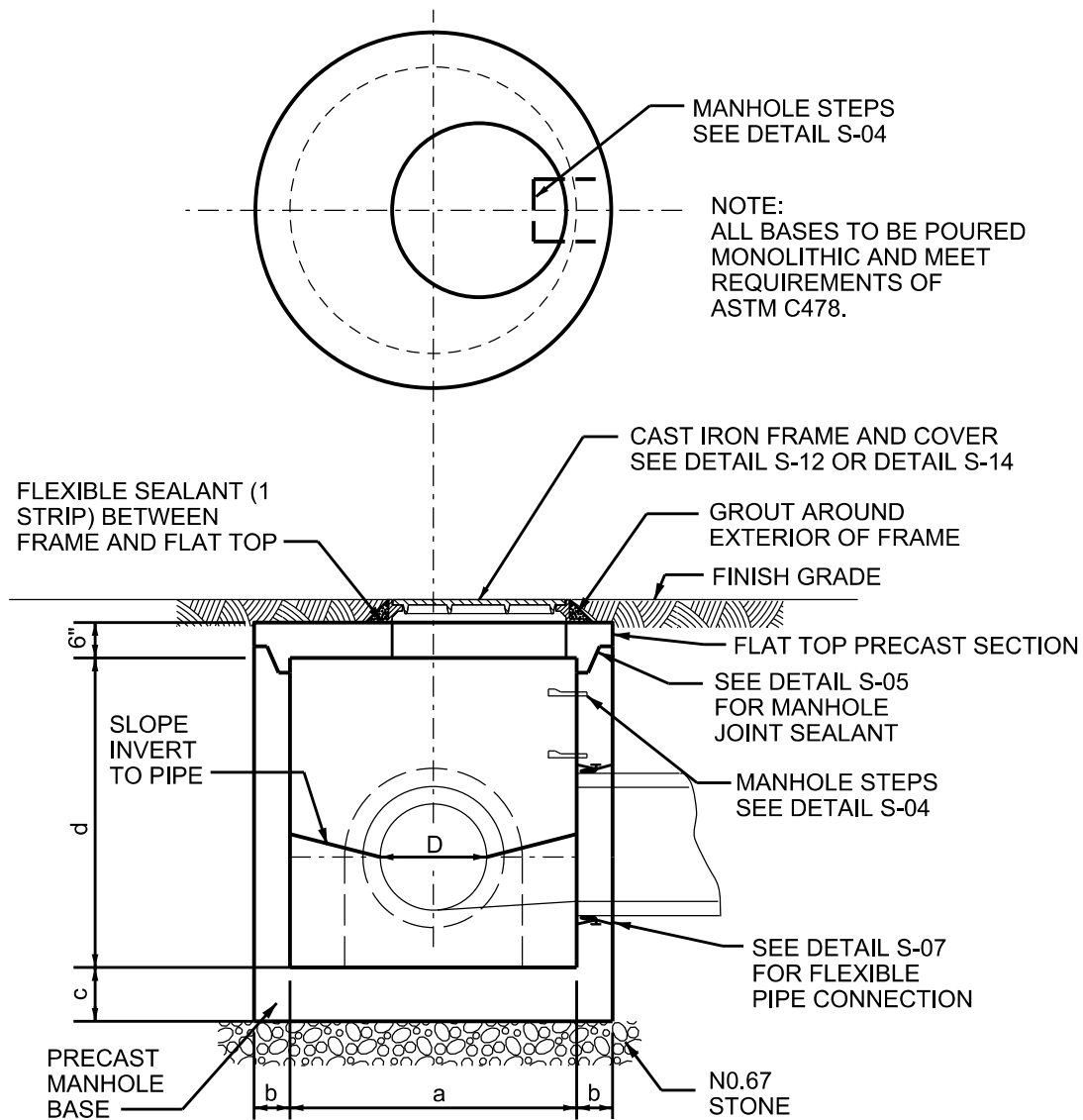


CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL

72" TO 48" TRANSITION
MANHOLE

MARCH, 2016

DRAWING NO. S-02



PIPE DIAMETER	MANHOLE DIAMETER	WALL THICKNESS	BASE THICKNESS	MIN. RISER HEIGHT	MAX. RISER HEIGHT
D	a	b	c	d	d
< 16"	4'-0"	5"	8"	2'-6"	5'-8"

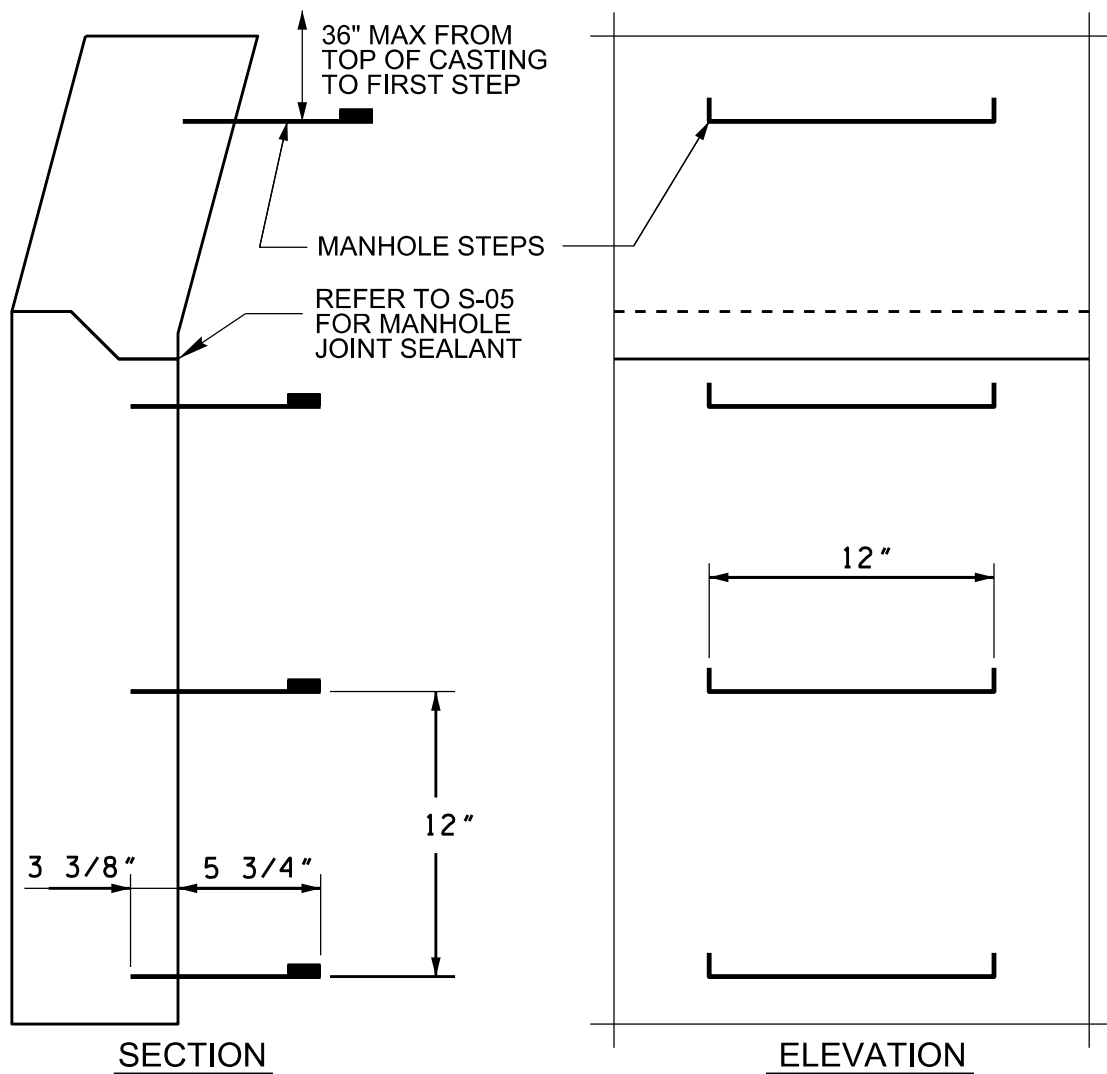


**CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL**

**SHALLOW TYPE
MANHOLE**

MARCH, 2016

DRAWING NO. S-03



1. STEPS TO BE INTEGRALLY CAST INTO MANHOLE SECTION.
2. STEPS TO BE ALIGNED VERTICALLY THROUGHOUT EACH MANHOLE SECTION
3. LAST STEP TO BE 12" ABOVE PIPE
4. STEPS TO BE 3/4" FORMED ALUMINUM RUNGS OR STEEL - REINFORCED, COPOLYMER POLYPROPYLENE PLASTIC COVERED.



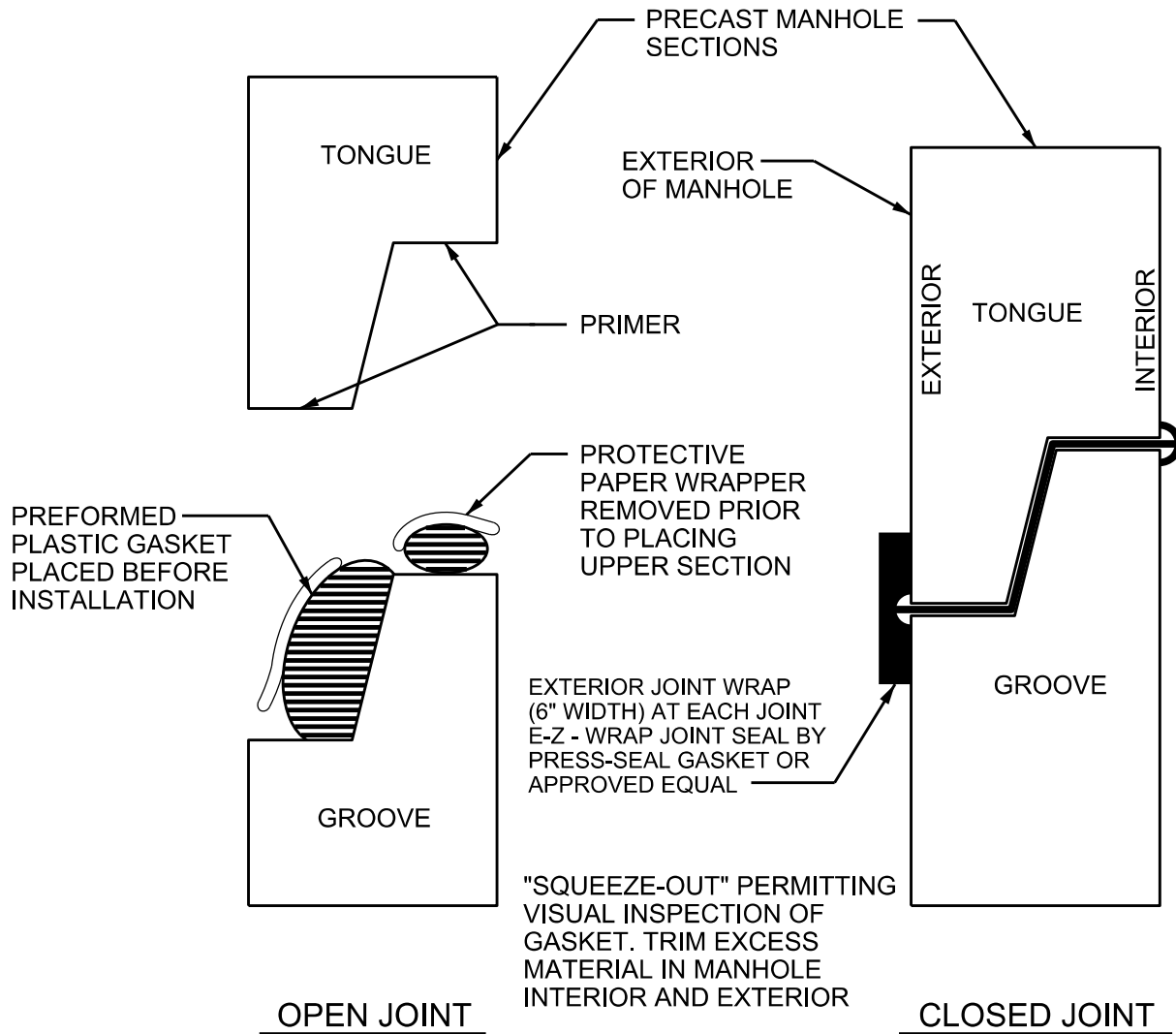
CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL

TYPICAL
MANHOLE STEPS

MARCH, 2016

DRAWING NO. S-04

NOTE:
WHERE MASTIC DOES NOT PROTRUDE, EITHER
INSIDE OR OUTSIDE, POINT UP JOINT WITH
GROUT

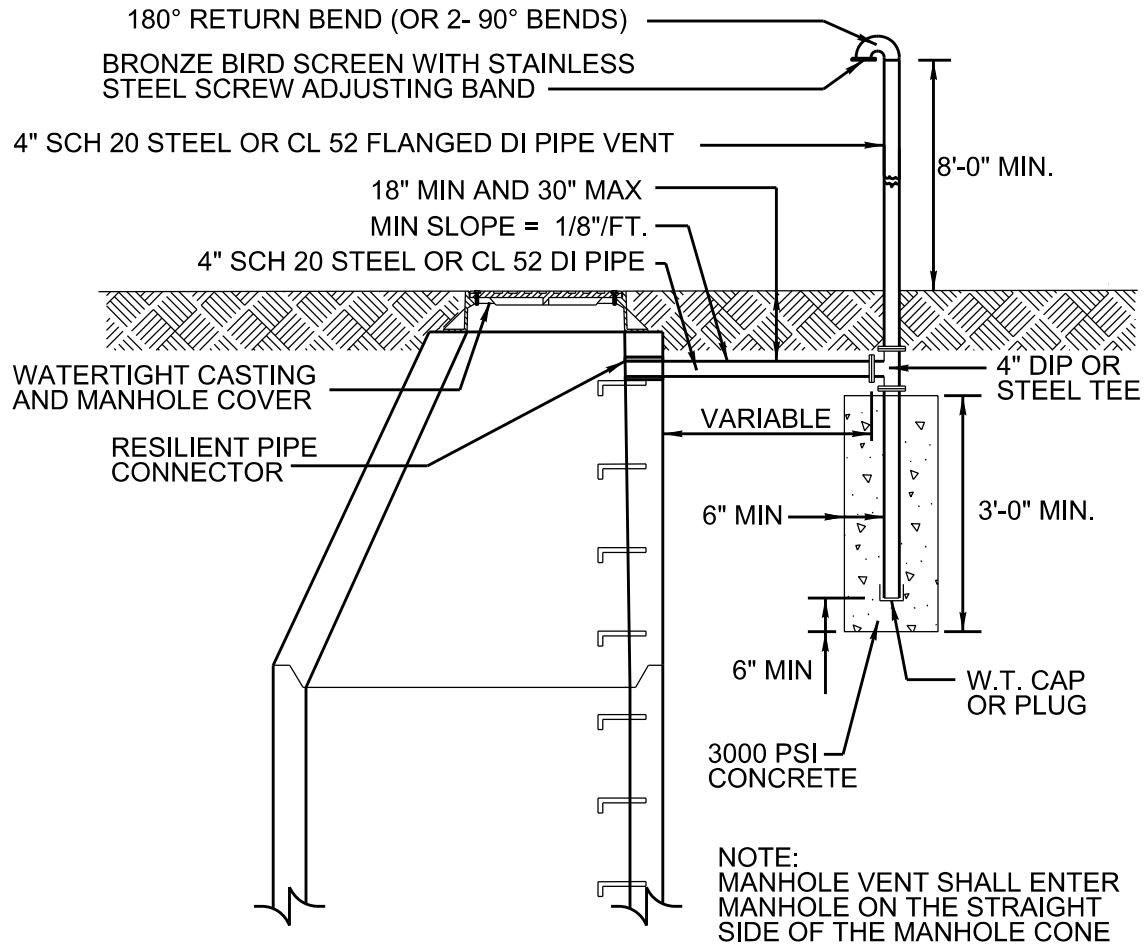


**CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL**

**MANHOLE JOINT
SEALANT**

MARCH, 2016

DRAWING NO. S-05



NOTES:

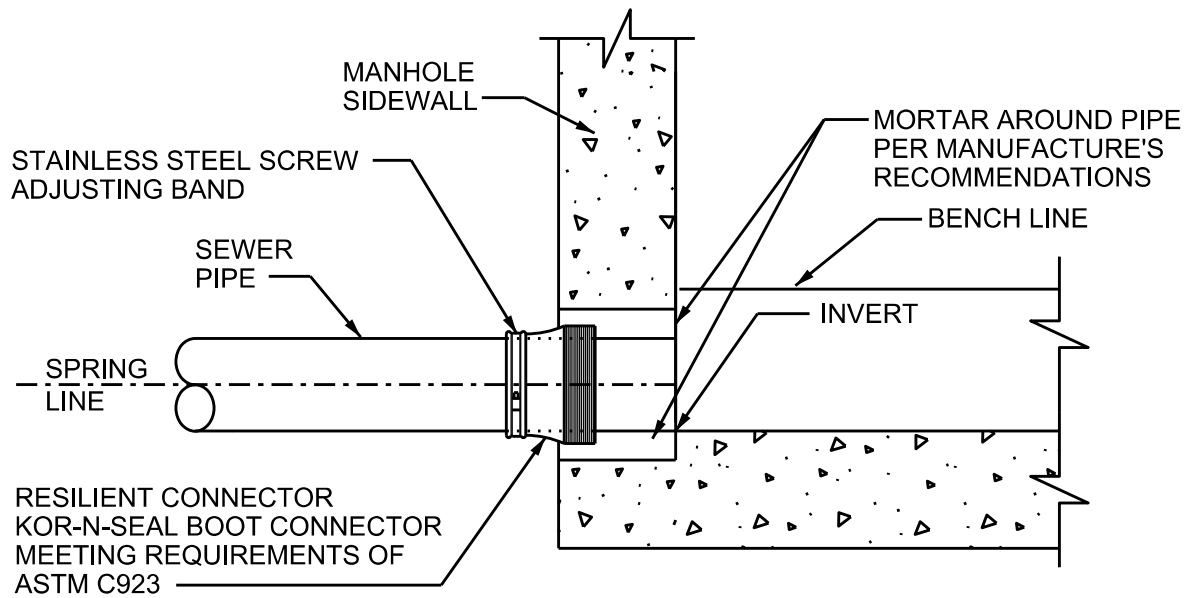
1. PIPE EXTERIOR TO BE PAINTED WITH ONE COAT OF PRIMER, AND TWO COATS OF DARK GREEN ENAMEL.
2. PIPE INTERIOR TO BE LINED WITH TNESEC SERIES 10 PRIMER, PROTECTO 401, OR EQUAL. (SSPC-SP3 SURFACE PREPARATION).
3. TOP OF VENT TO BE MINIMUM OF 8'-0" ABOVE GRADE OR 1' ABOVE 100 YEAR FLOOD ELEVATION.



CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL

MANHOLE VENT ASSEMBLY
MARCH, 2016

DRAWING NO. S-06



NOTE:

1. PIPES ENTERING/EXITING MANHOLES SHALL BE A MINIMUM OF 6 FT IN LENGTH



CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL

FLEXIBLE MANHOLE
PIPE CONNECTION

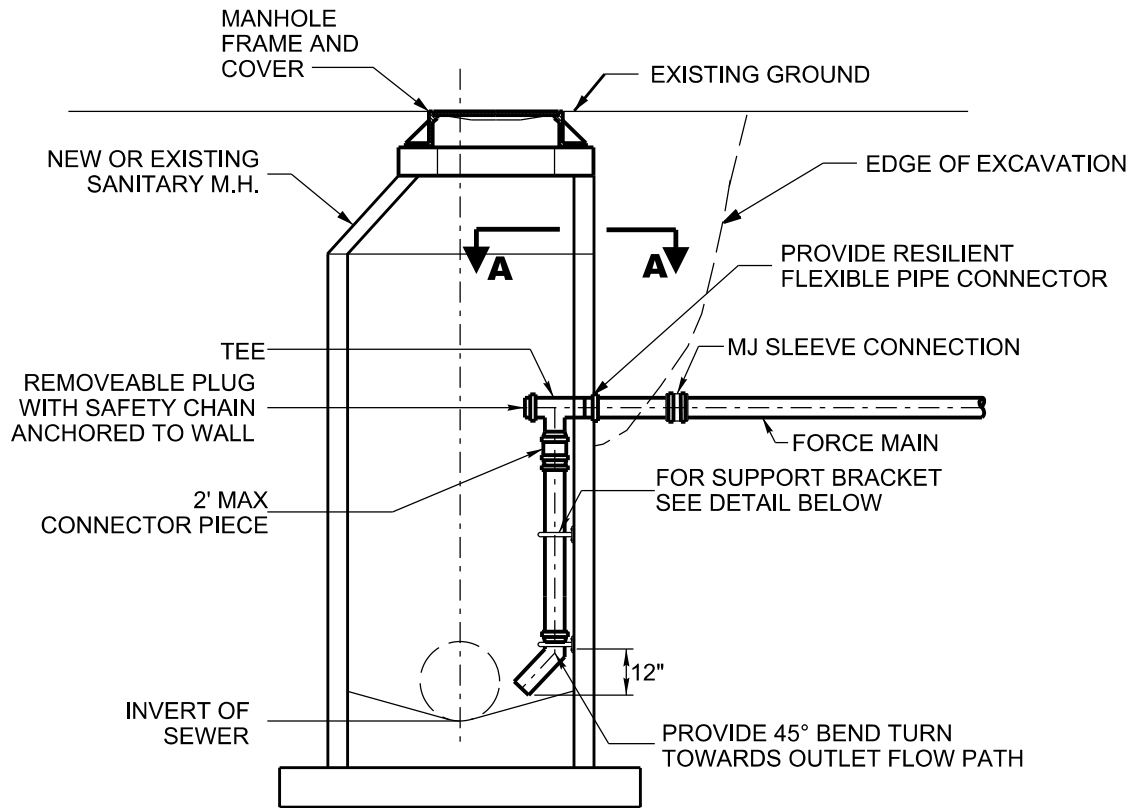
MARCH, 2016

DRAWING NO. S-07

FOR GRAVITY SEWERS, DROP SIZES SHALL BE 8" FOR MAIN LINE UP THROUGH 12"; 10" FOR MAIN LINE 15" AND LARGER.



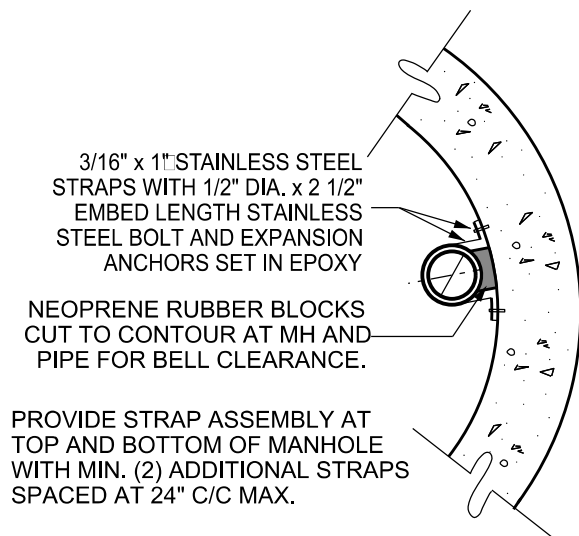
DRAWING NO. S-08



SECTION

NOTES:

1. LEVEL "GREEN" MANHOLE LINING SHALL BE APPLIED TO EXISTING MANHOLE, PLUS TWO IMMEDIATE DOWNSTREAM MANHOLES.
2. LEVEL "BLUE" MANHOLE LINING SHALL BE APPLIED TO NEW MANHOLE, PLUS TWO IMMEDIATE DOWNSTREAM MANHOLES.
3. INTERIOR PIPING TO BE SAME SIZE AS FORCE MAIN PIPING, AND SHALL BE SCHEDULE 40 w/ GLUED JOINTS.



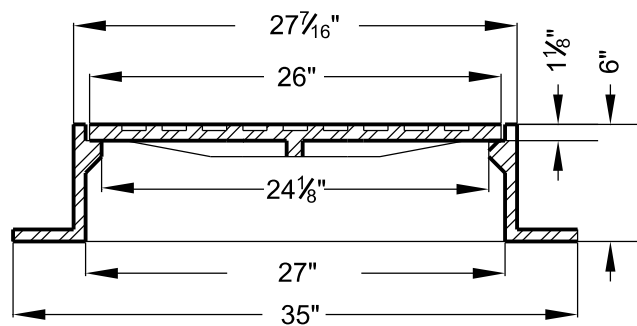
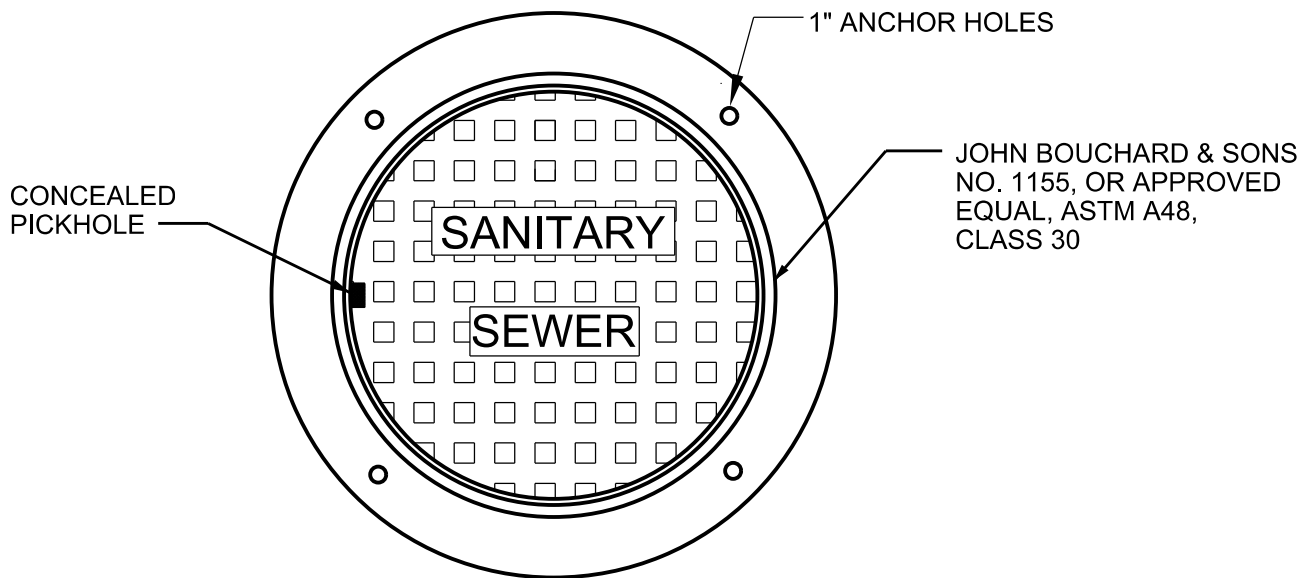
SECTION A-A



**CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL**

**INTERIOR DROP MANHOLE
CONNECTION (FORCE MAIN
CONNECTION ONLY)**
MARCH, 2016

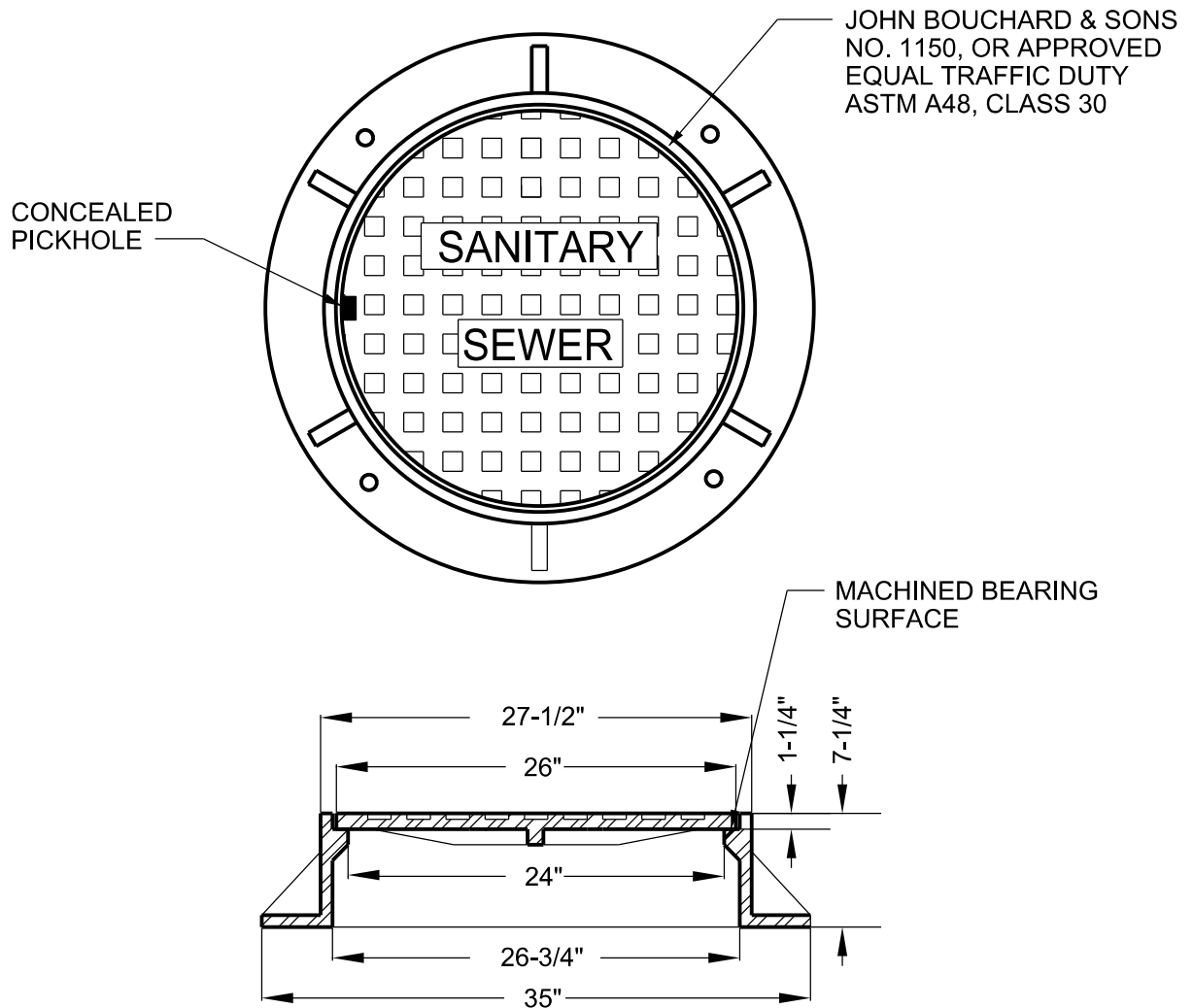
DRAWING NO. S-09



CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL

NON-TRAFFIC TYPE
MANHOLE
FRAME AND COVER
MARCH, 2016

DRAWING NO. S-10



CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL

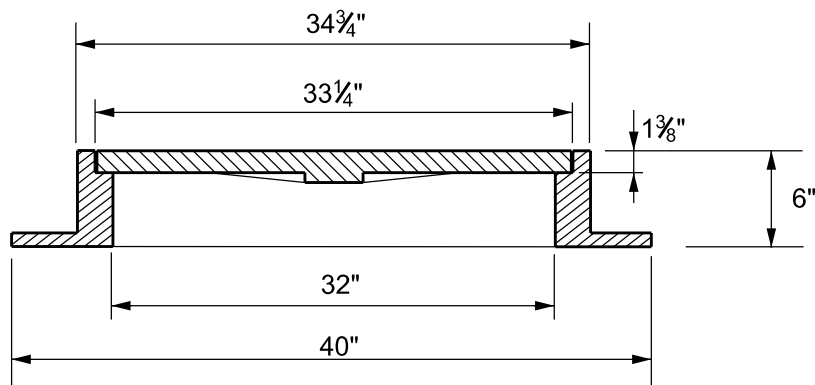
TRAFFIC TYPE
MANHOLE
FRAME AND COVER
MARCH, 2016

DRAWING NO. S-11



JOHN BOUCHARD & SONS
NO. 1312, OR APPROVED
EQUAL ASTM A48, GRADE 30

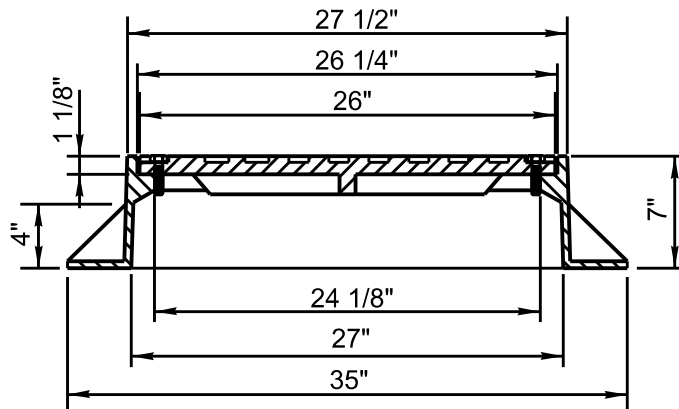
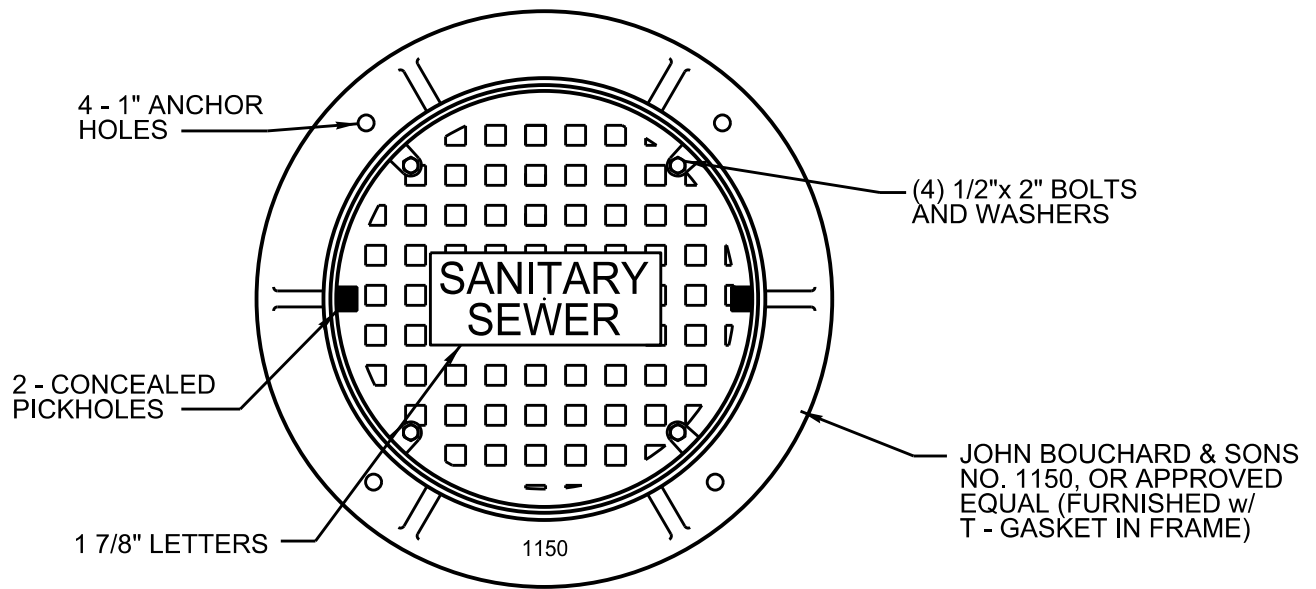
CONCEALED PICK HOLE



CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL

SHALLOW TYPE MANHOLE
FRAME AND COVER
MARCH, 2016

DRAWING NO. S-12



- NOTES:
1. MACHINED BEARING SURFACES
 2. HEAVY DUTY, H20 LOAD RATED

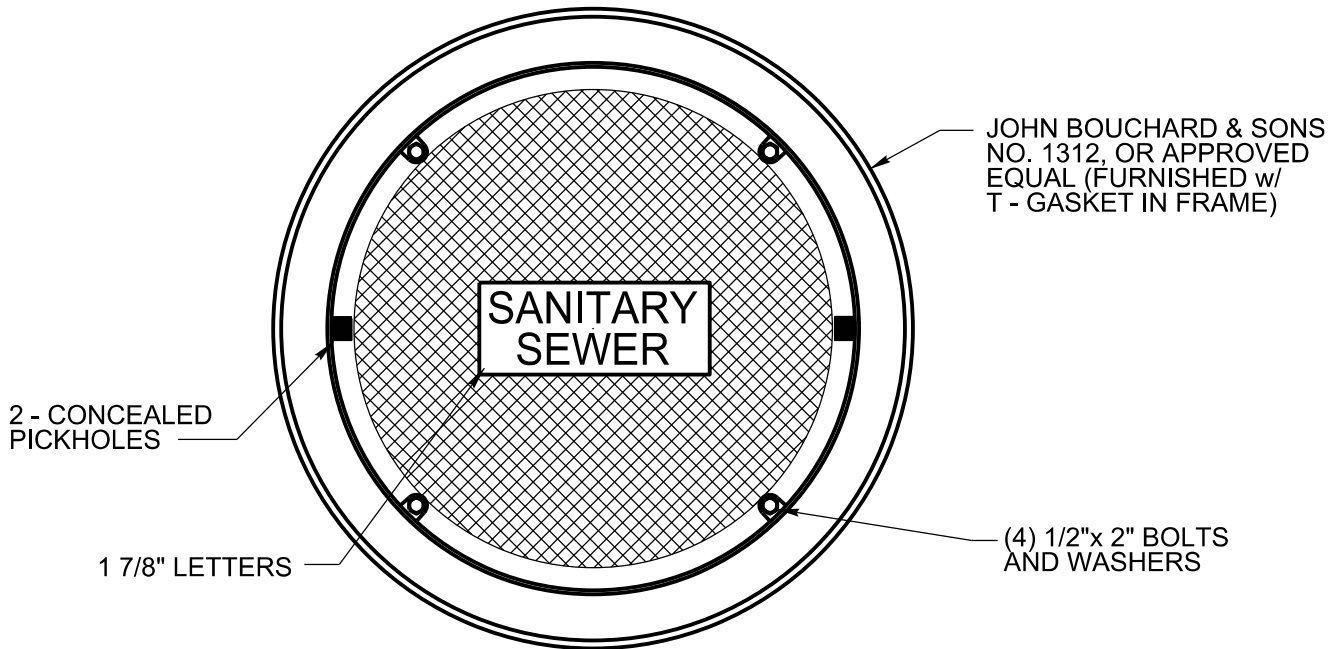


CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL

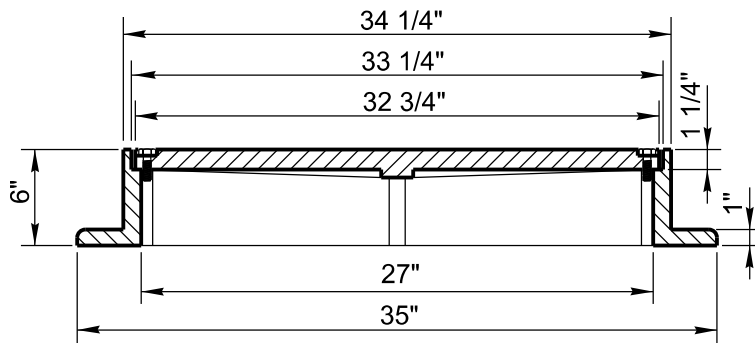
WATERTIGHT MANHOLE
FRAME AND COVER

MARCH, 2016

DRAWING NO. S-13



NOTES:
1. MACHINED BEARING SURFACES
2. TRAFFIC DUTY

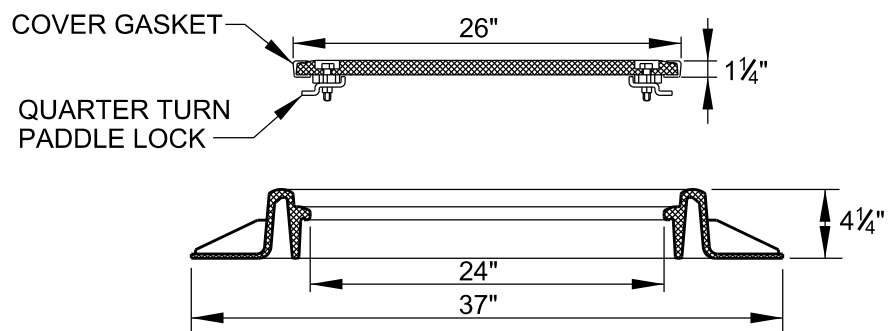
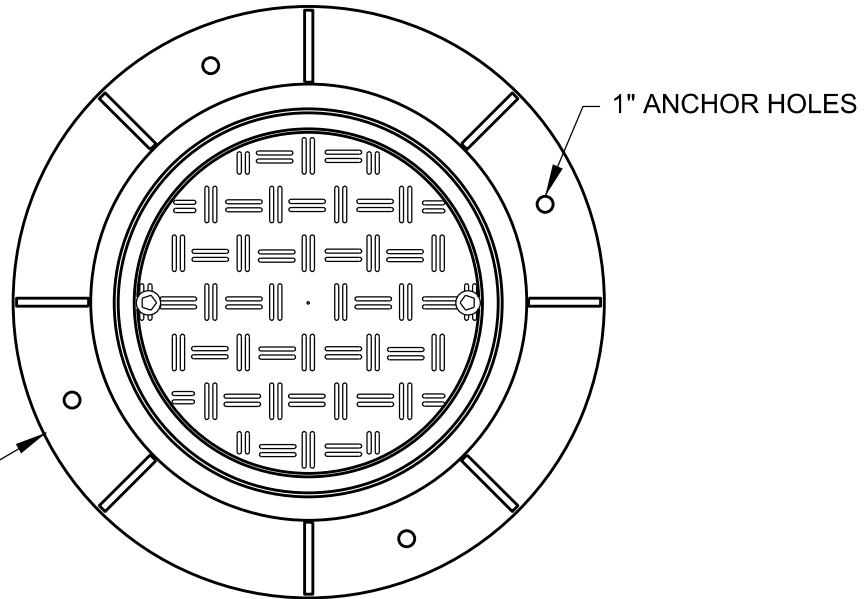


CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL

SHALLOW TYPE
MANHOLE WATERTIGHT
FRAME AND COVER
MARCH, 2016

DRAWING NO. S-14

GMI COMPOSITES INC.
2600 OR APPROVED
EQUAL, AASHTO H-20/25
EN124 D400



NOTE:
THIS STYLE MANHOLE FRAME AND COVER TO
BE USED ON MANHOLES WHERE FORCE MAINS
CONNECT OR AS DIRECTED BY THE WATER
AND SEWER DEPARTMENT.

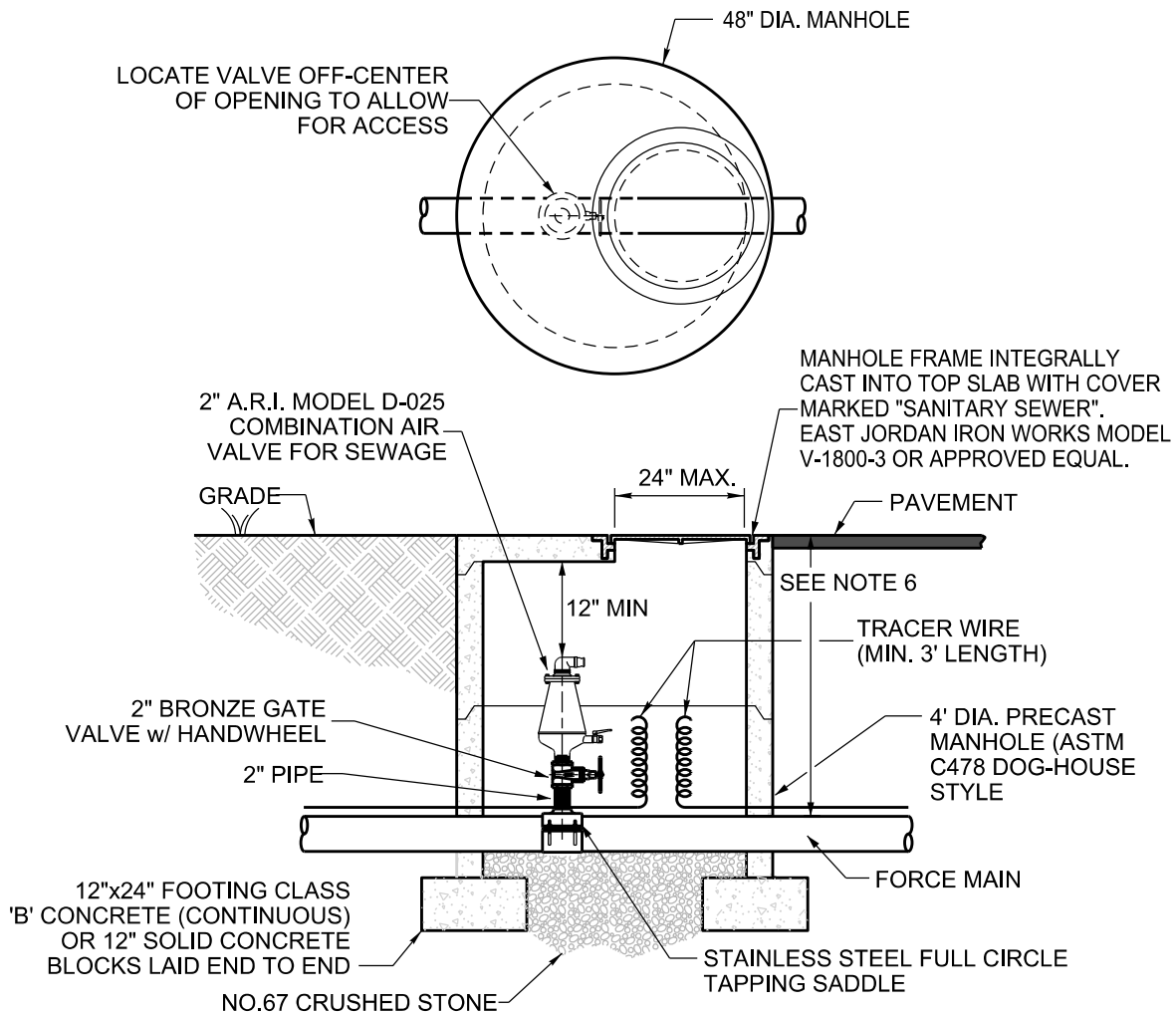


CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL

COMPOSITE MANHOLE
FRAME AND COVER

MARCH, 2016

DRAWING NO. S-15



NOTES:

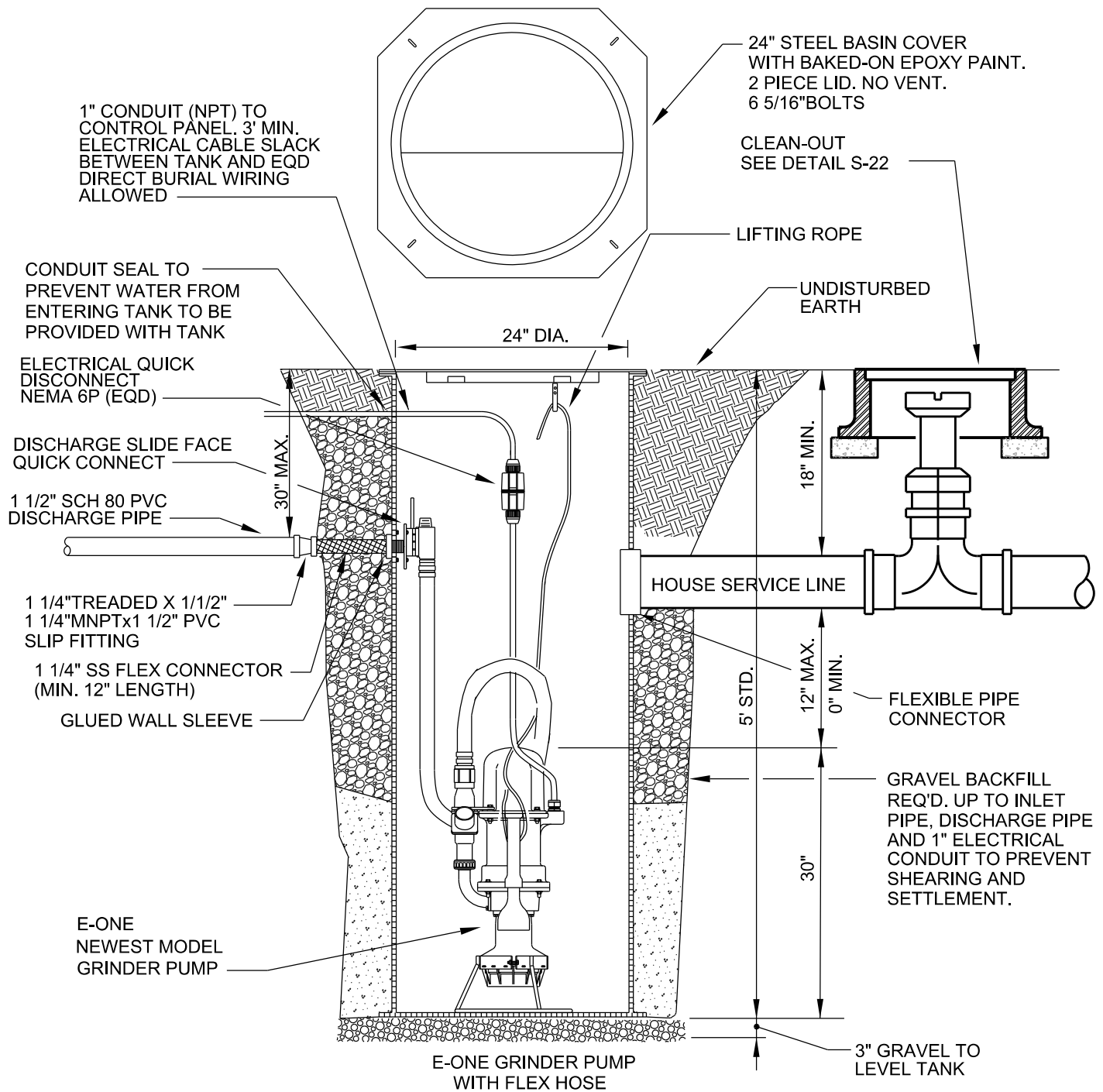
1. COMBINATION AIR VALVE TO BE INSTALLED AT ACTUAL HIGH POINT OF LINE. CONTRACTOR SHALL COORDINATE LOCATION WITH INSPECTOR
2. ALL PIPING FOR COMBINATION AIR VALVE SHALL BE STAINLESS STEEL.
3. CONTRACTOR SHALL ADJUST THE DEPTH OF THE FORCE MAIN AT ALL HIGH POINTS TO ACCOMMODATE THE INSTALLATION OF THE COMBINATION AIR VALVE.
4. TERMINATE TRACER WIRE INSIDE VALVE VAULT.
5. APPLY NON-SHRINK GROUT AS NEEDED AT PIPE-TO-MANHOLE CONNECTION TO PREVENT SEDIMENTATION INSIDE MANHOLE.
6. DEPTH OF ARV MANHOLE SHALL BE OF SUFFICIENT DEPTH SO THAT FLAT-TOP SECTION AND CASTING ARE FLUSH WITH GRADE. CONTRACTOR SHALL MODIFY PIPE DEPTH AS NEEDED DURING INSTALLATION TO ACCOMMODATE DEPTH OF STRUCTURE.



**CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL**

**TYPICAL SEWAGE
COMBINATION AIR VALVE
ASSEMBLY**
MARCH, 2016

DRAWING NO. S-16



CONCRETE POURED AROUND BASIN TO PREVENT FLOTATION SHALL BE AS RECOMMENDED BY THE GRINDER PUMP MANUFACTURER. 2 CUBIC FEET OF CONCRETE REQUIRED PER FOOT OF BASIN DEPTH MINIMUM.

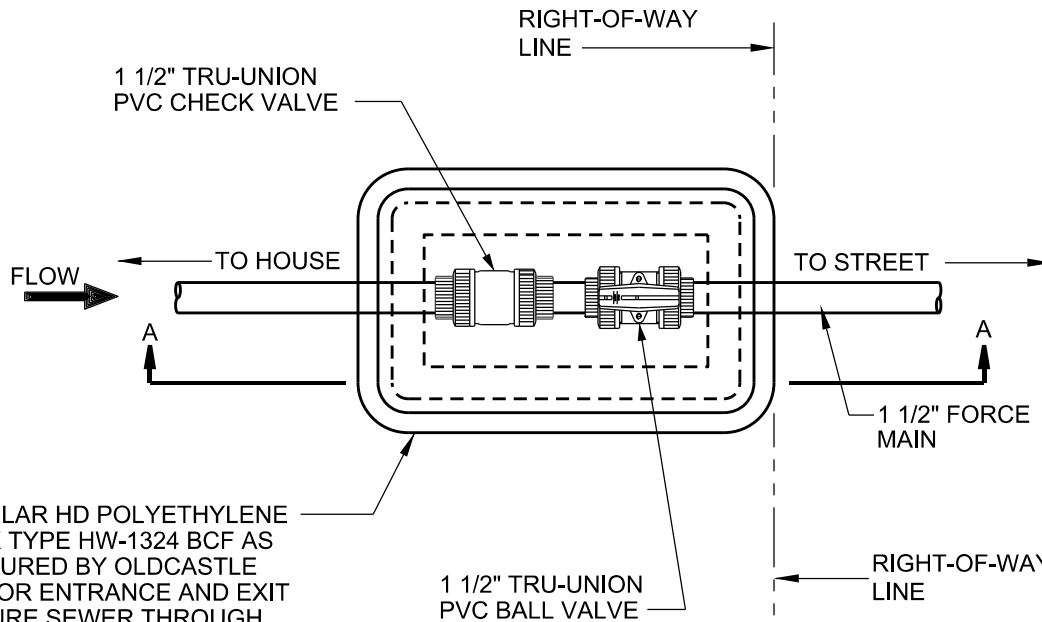


CITY OF BRENTWOOD WATER SERVICES STANDARD DETAIL

TYPICAL GRINDER PUMP

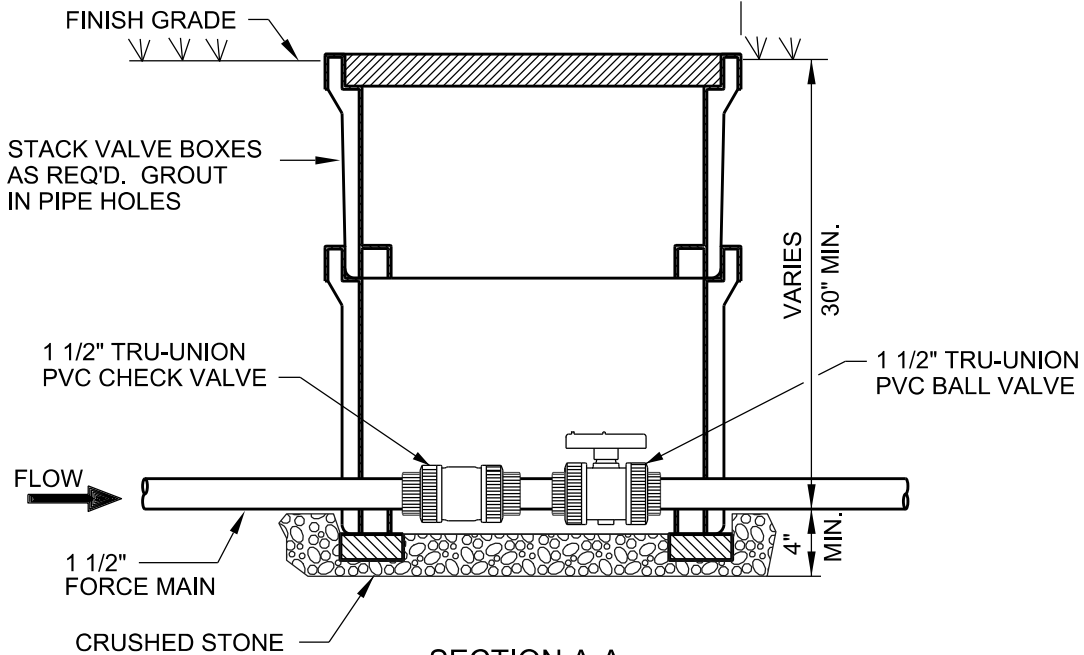
MARCH, 2016

DRAWING NO. S-17



PLAN

USE TRAFFIC FRAME AND COVER WHEN LOCATED IN THE STREET. COVER MARKED "SEWER"



SECTION A-A

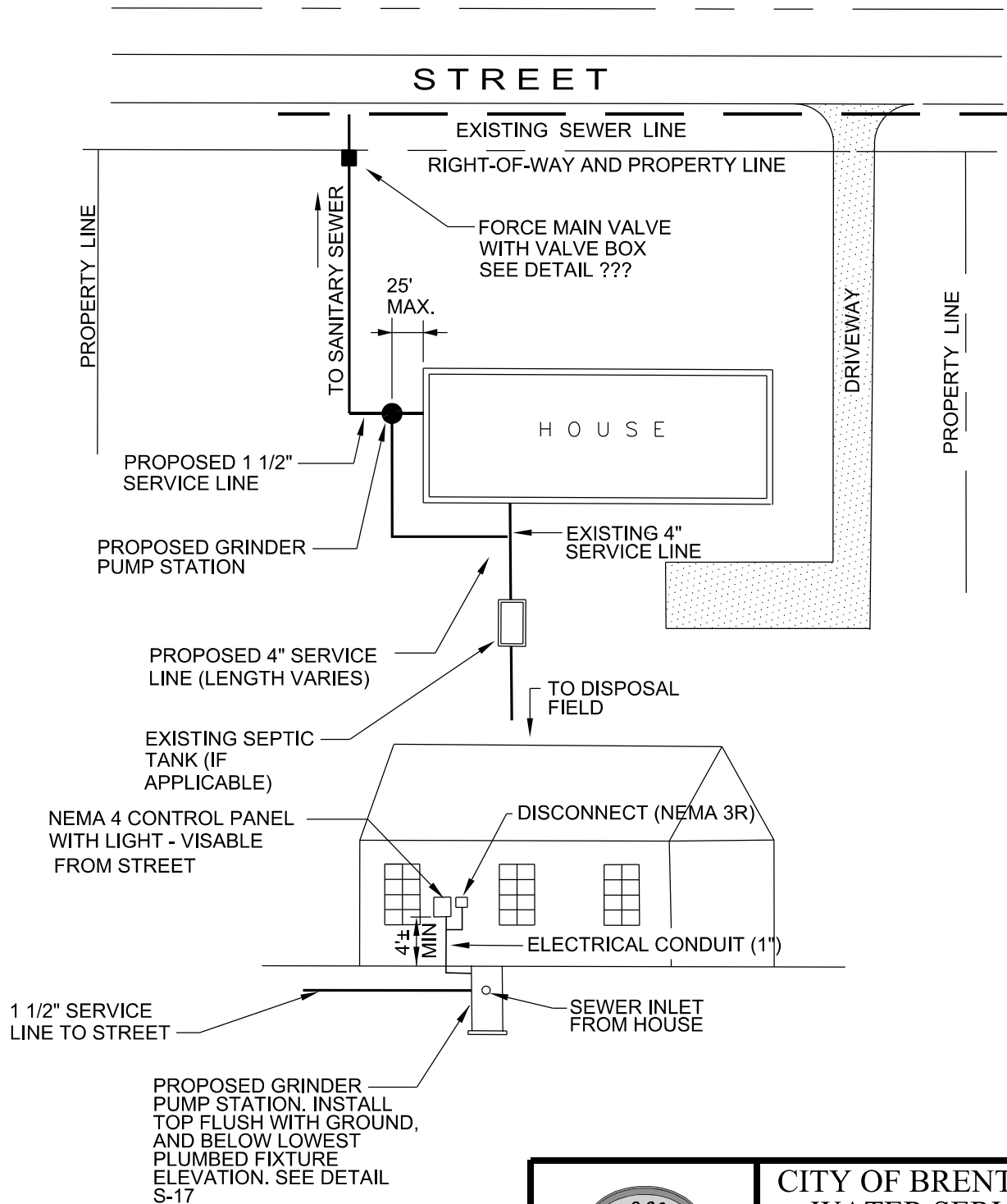


**CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL**

**GRINDER PUMP
SERVICE VALVE ASSEMBLY**

MARCH, 2016

DRAWING NO. S-18



THE EXACT LOCATION OF THE GRINDER PUMP SHALL BE DETERMINED IN THE FIELD BUT NO MORE THAN 25' FROM THE HOME.

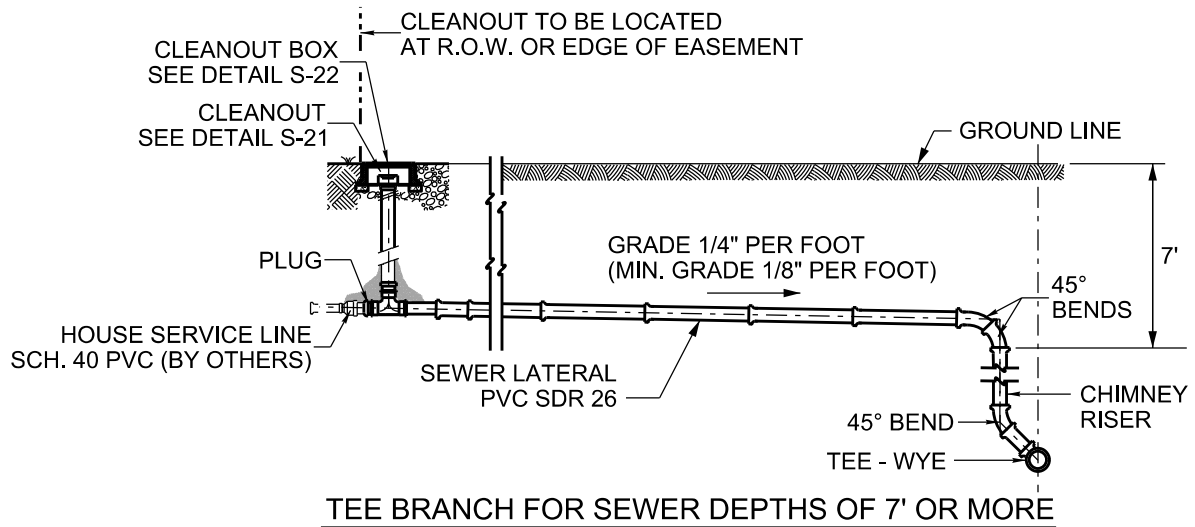
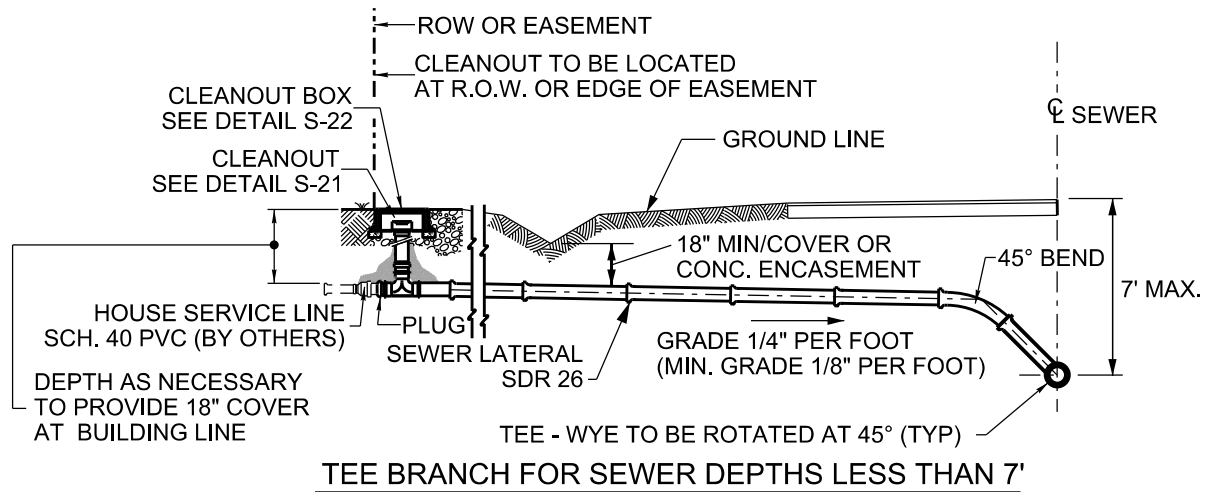
GRINDER PUMP AND SERVICE LINE NOT TO BE INSTALLED UNDER DRIVEWAY, SIDEWALK, PARKING AREA, DECK OR PATIO.



CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL

TYPICAL GRINDER
PUMP LAYOUT
MARCH, 2016

DRAWING NO. S-19



NOTES:

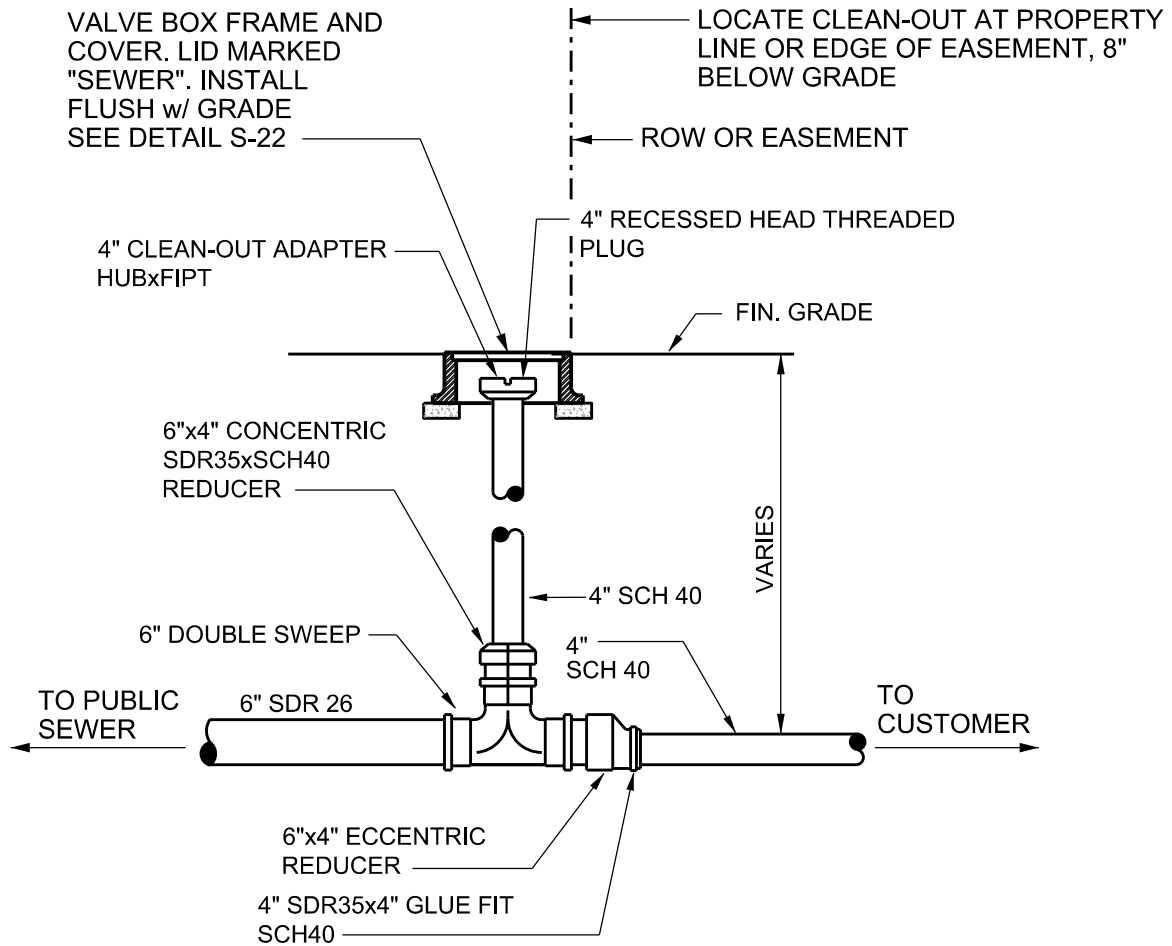
1. LATERAL SIZE TO BE 6" PVC SDR 26 SERVICES >6" MUST CONNECT AT A MANHOLE.
2. TEES SHALL BE SDR 26 WITH GASKETED BRANCHES OR MJ C153 DI TEE.
3. TEES SHALL NOT BE ORIENTED IN THE 12 O'CLOCK (STRAIGHT UP) POSITION.
4. TEES SHALL NOT BE PLACED BACK-TO-BACK. CONSECUTIVE TEES MUST BE SEPARATED BY AT LEAST 6 FT OF MAIN LINE PIPE.
5. PLACE TREATED 4"x 4" TIMBER, 42" LONG OR 2" SCH. 40 PVC PIPE FOR END OF SERVICE LOCATION. PAINT LOCATION MARKER GREEN.



CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL

SANITARY SEWER
LATERALS
MARCH, 2016

DRAWING NO. S-20



CLEAN-OUT

FITTING	PART No. *
6" DOUBLE SWEEP	G1006
6"x4" CONCENTRIC REDUCER	G1216
4" CLEAN-OUT ADAPTER HUB	P1404
4" RECESSED HEAD THREADED PLUG	P1144
6"x4" ECCENTRIC REDUCER	G1306
4" SDR35xSCH40 ADAPTER	P1213

* AS MANUFACTURED BY PLASTIC TRENDS, INC.
OR EQUIVALENT

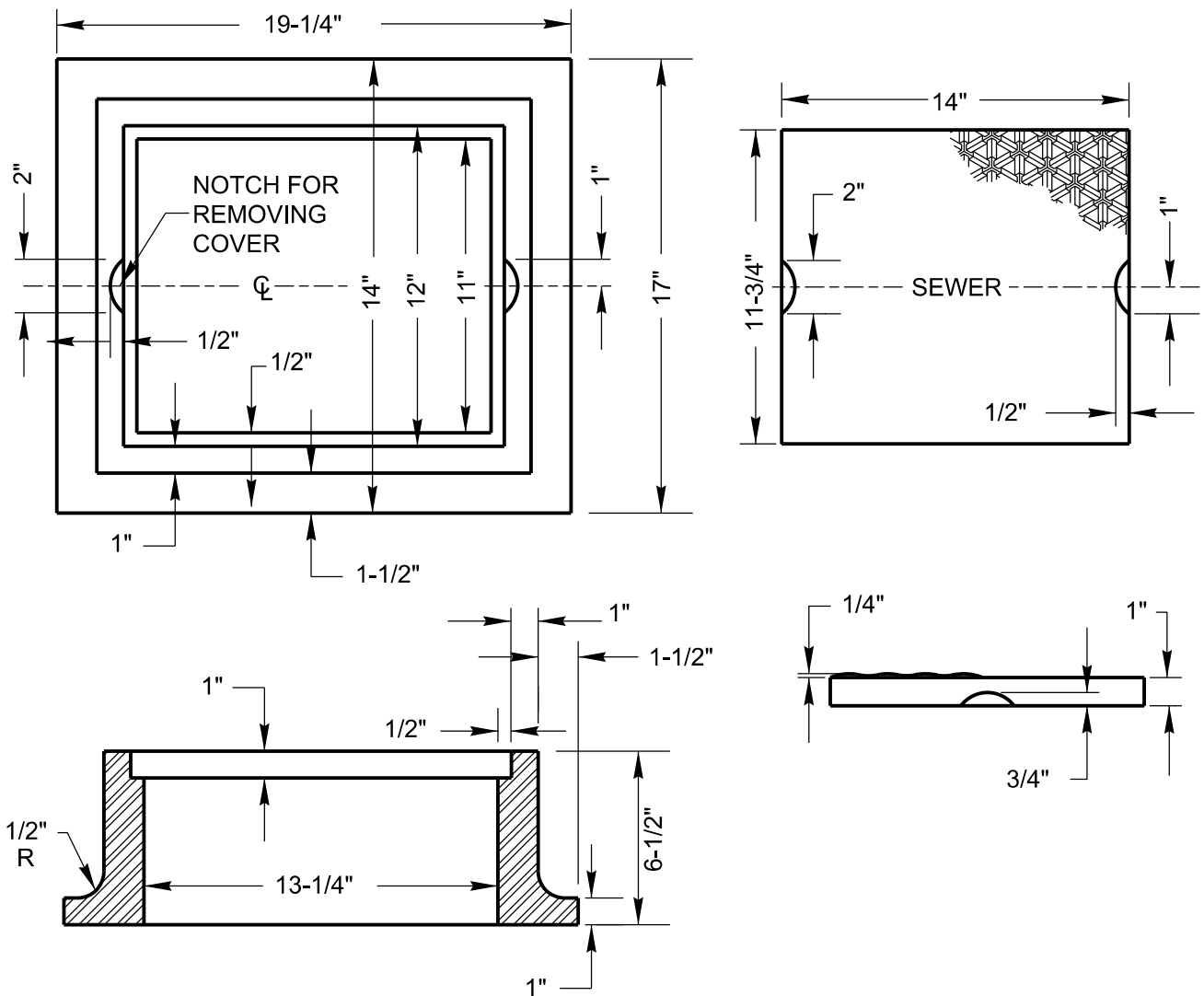


CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL

LOT LINE SEWER
SERVICE CONNECTION

MARCH, 2016

DRAWING NO. S-21



NOTES:

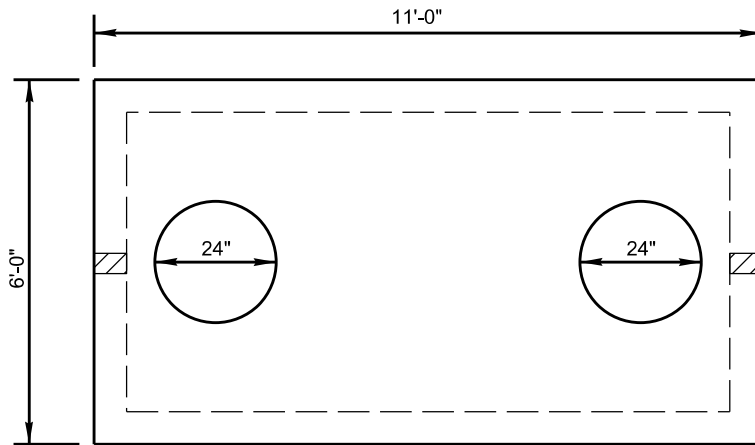
1. NO OPEN SAND CASTINGS, CASTINGS ARE TO BE MADE OF CAST IRON IN ACCORDANCE WITH CURRENT SPECIFICATIONS. COVER MUST FIT EVENLY ON RABBIT OF FRAME IN ORDER TO EQUALLY DISTRIBUTE WEIGHT OF COVER OVER FRAME MINIMUM WEIGHT OF FRAME 150 LBS. MINIMUM WEIGHT OF COVER 45 LBS.



CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL

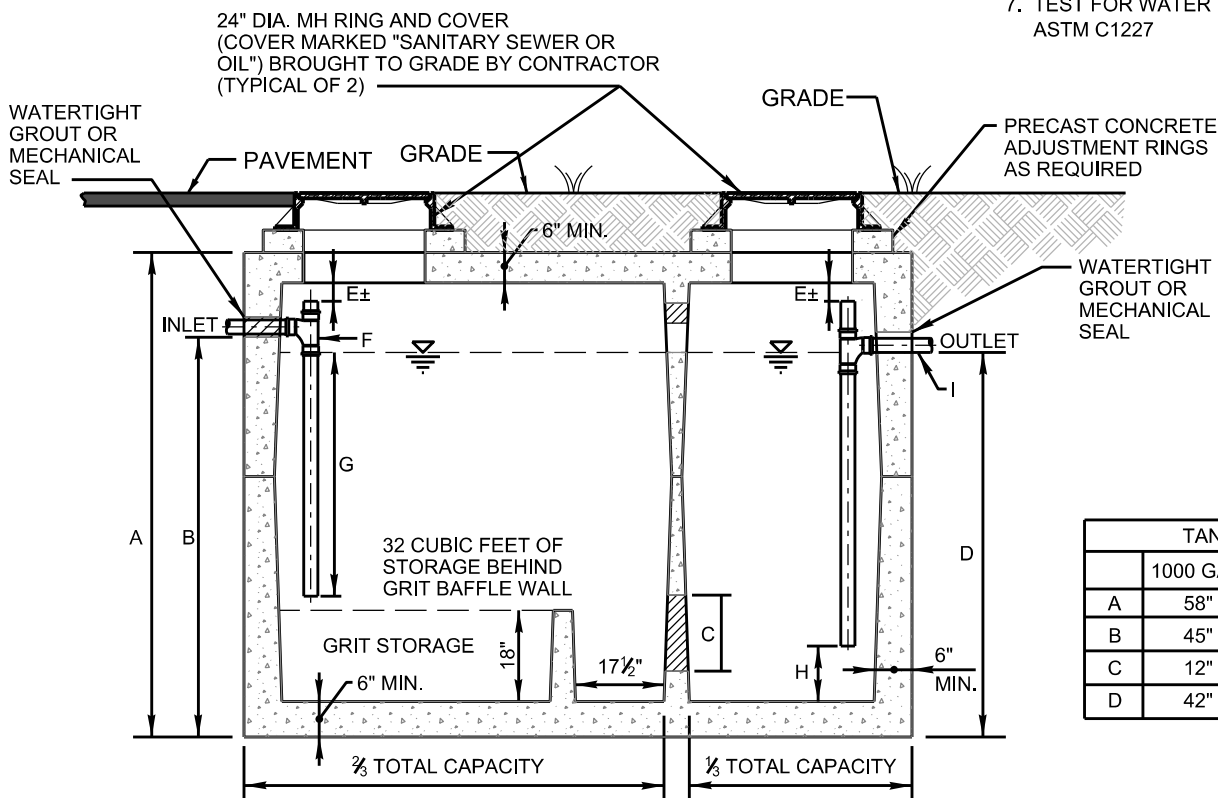
SANITARY SEWER
CLEANOUT BOX
FRAME & COVER
MARCH, 2016

DRAWING NO. S-22



GENERAL NOTES:

1. CONCRETE: 28 DAY COMPRESSIVE STRENGTH $f'_c = 4,500$ PSI
2. STEEL REINFORCEMENT: ASTM A-615, GRADE 60
3. COVER TO STEEL - 1" MINIMUM
4. VAULTS ARE DESIGNED TO MEET ASTM C858 AND ACI 318 WITH AASHTO HS-20 LOADING
5. EARTH COVER - 0 TO 2 FEET
6. IF JOINT IS REQUIRED - JOINT TO BE DOUBLE SEALED WITH $1\frac{1}{4}$ " DIA. CONSEAL OR APPROVED EQUAL.
7. TEST FOR WATER TIGHTNESS PER ASTM C1227



TANK SIZE		
	1000 GAL.	2000 GAL.
A	58"	95.75"
B	45"	79"
C	12"	15"
D	42"	76"

- E. MINIMUM 6", BUT NOT LESS THAN PIPE DIAMETER.
 F. INLET PIPE INVERT TO BE $2\frac{1}{2}$ " ABOVE LIQUID SURFACE.
 G. INLET PIPE TO TERMINATE $\frac{2}{3}$ DEPTH OF WATER LEVEL.
 H. 12" FROM FLOOR TO END OF OUTLET PIPE.
 I. OUTLET PIPE NO SMALLER THAN INLET PIPE, MINIMUM - 4"
 J. OLDCASTLE PRECAST OR C. R. BARGER & SONS ARE APPROVED MANUFACTURERS

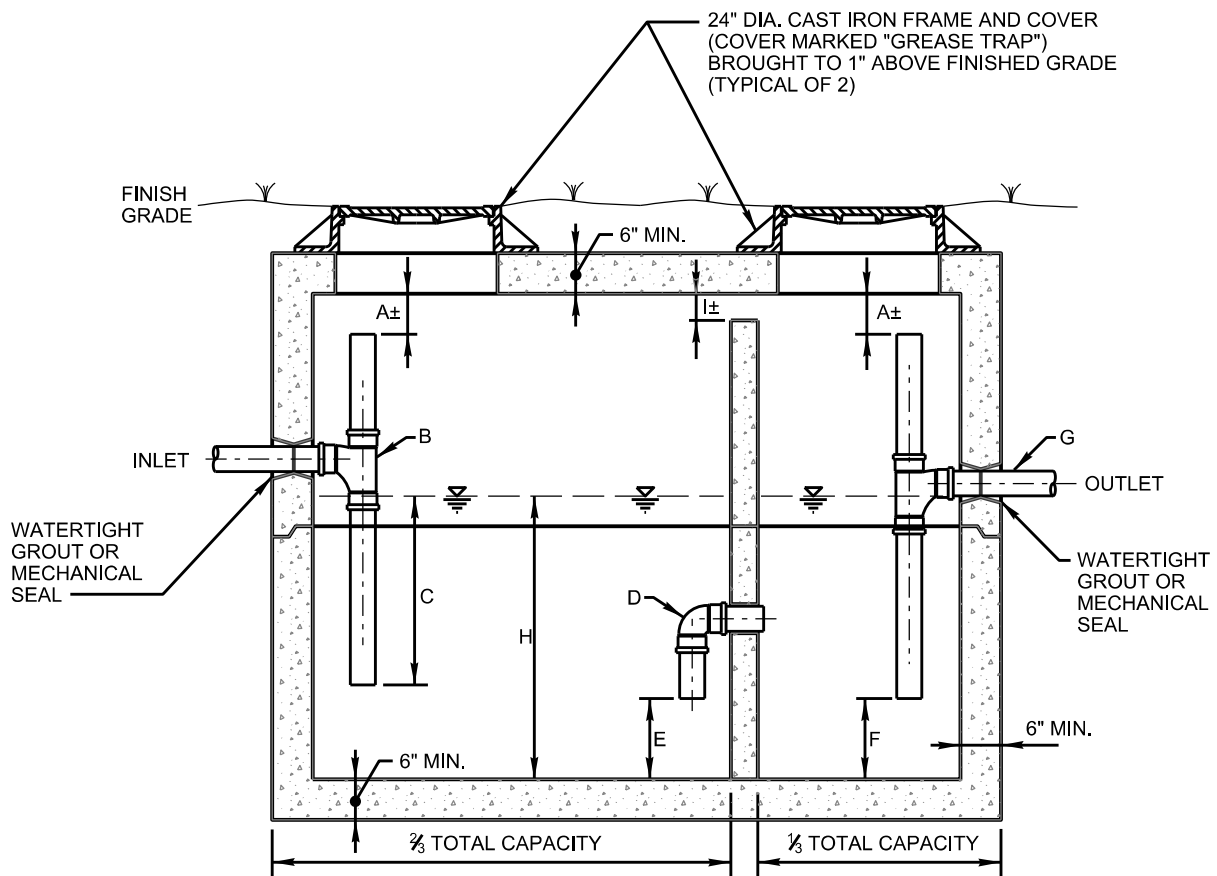


**CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL**

**TYPICAL OIL-WATER / GRIT
INTERCEPTOR
(1,000 OR 2,000 GAL.)
MARCH, 2016**

DRAWING NO. S-23

NOTE:
REFER TO CITY OF BRENTWOOD
FATS, OILS & GREASE (FOG)
MANAGEMENT POLICY FOR
SPECIFICATIONS AND
ADDITIONAL REQUIREMENTS.



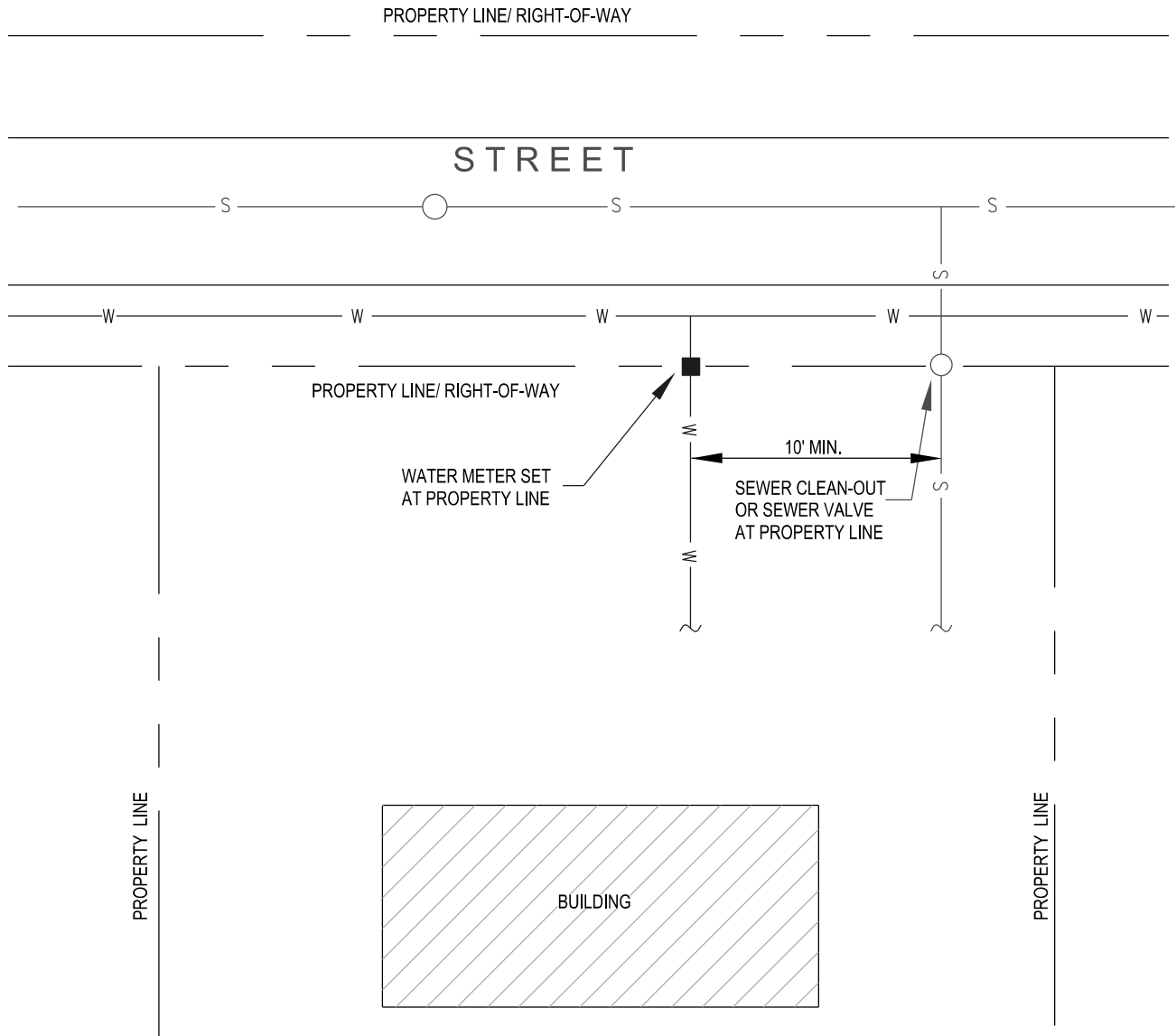
- A. MINIMUM 6", BUT NOT LESS THAN PIPE DIAMETER.
- B. INLET PIPE INVERT TO BE $2\frac{1}{2}$ " ABOVE LIQUID SURFACE.
- C. INLET PIPE TO TERMINATE $\frac{2}{3}$ DEPTH OF WATER LEVEL.
- D. 90 DEGREE SWEEP, MINIMUM SIZE - 6"
- E. 12" FROM FLOOR TO END OF SWEEP.
- F. 12" FROM FLOOR TO END OF OUTLET PIPE.
- G. OUTLET PIPE NO SMALLER THAN INLET PIPE, MINIMUM - 4"
- H. MINIMUM DEPTH OF LIQUID CAPACITY - 42"
- I. MAXIMUM DISTANCE FROM CEILING - 6"
- J. OLDCASTLE PRECAST OR C. R. BARGER & SONS ARE APPROVED MANUFACTURERS



CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL

TYPICAL GREASE
INTERCEPTOR
(1,000 OR 2,000 GAL.)
MARCH, 2016

DRAWING NO. S-24

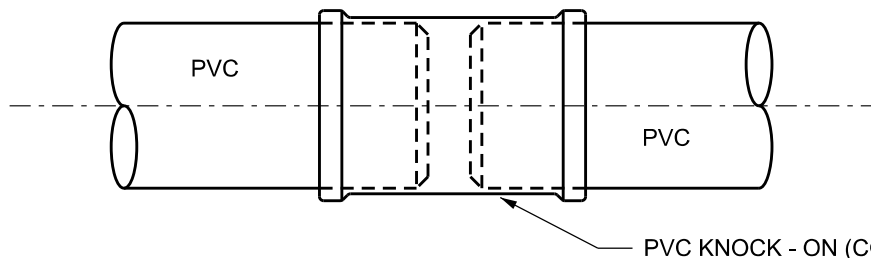


**CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL**

**TYPICAL WATER & SEWER
SERVICE SEPARATION**

MARCH, 2016

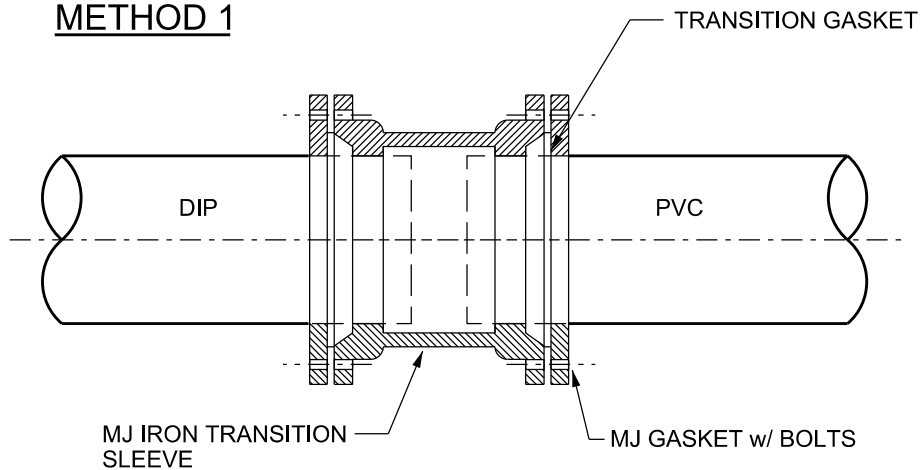
DRAWING NO. S-25



NOTES:

1. CUT AND BEVEL NEW PIPE TO FIT THE GAP OF THE REPAIR SECTION.
2. INSTALL REPAIR COUPLING ON PIPE SECTION.
3. BEVEL ENDS OF EXISTING PIPE.
4. MARK EXISTING PIPE AS A GUIDE TO CENTER COUPLING OVER JOINT.
5. ALIGN AND SLIDE REPAIR COUPLINGS OVER THE ORIGINAL PIPE TO MARKS CENTERING COUPLINGS OVER THE CUT.

METHOD 1



NOTES:

1. TRANSITION SLEEVES SHALL BE SOLID, MECHANICAL JOINT, LONG PATTERN FITTINGS. AWWA C153, OR PVC GASKETED, COMPRESSION COUPLING.
2. FLEXIBLE COUPLINGS (FERNCOS) ARE NOT PERMITTED.
3. BRENTWOOD WATER & SEWER DEPARTMENT SHALL APPROVE ALTERNATE TRANSITION METHODS.

METHOD 2



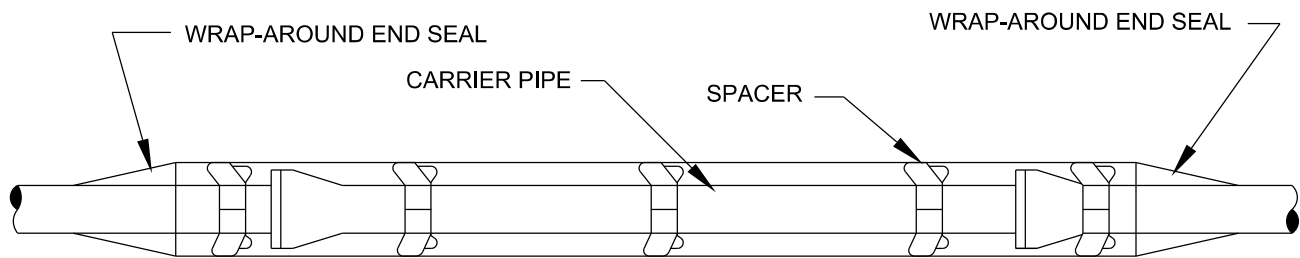
CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL

TYPICAL SEWER LINE
REPAIR TRANSITION

MARCH, 2016

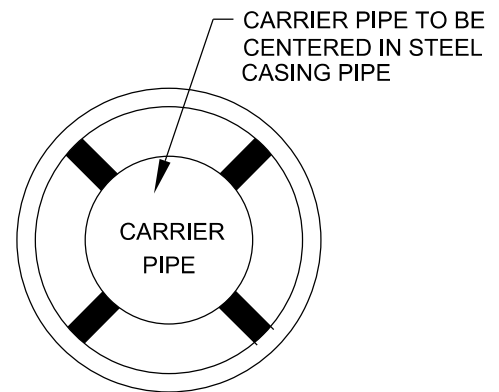
DRAWING NO. S-26

DRAWING NO. M-01



STEEL CASING PIPE

SPACERS FOR CARRIER PIPES UP THROUGH 36-INCHES IN DIAMETER SHALL BE INSTALLED WITHIN 1-FOOT ON EACH SIDE OF THE BELL AND IN THE CENTER OF THE JOINTS. IF SPACER IS MORE THAN 1-FOOT FROM END OF CASING PIPE, AN ADDITIONAL SPACER SHALL BE PLACED WITHIN 1-FOOT OF THE END OF THE CASING PIPE. SPACERS TO BE PIPELINE SEAL AND INSULATOR, INC. POLYPROPYLENE CASING SPACER MODEL RANGER II. END SEALS TO BE PIPELINE SEAL AND INSULATOR, INC. WRAP-AROUND (MODEL W)



CASING SPACER INSTALLATION DETAIL

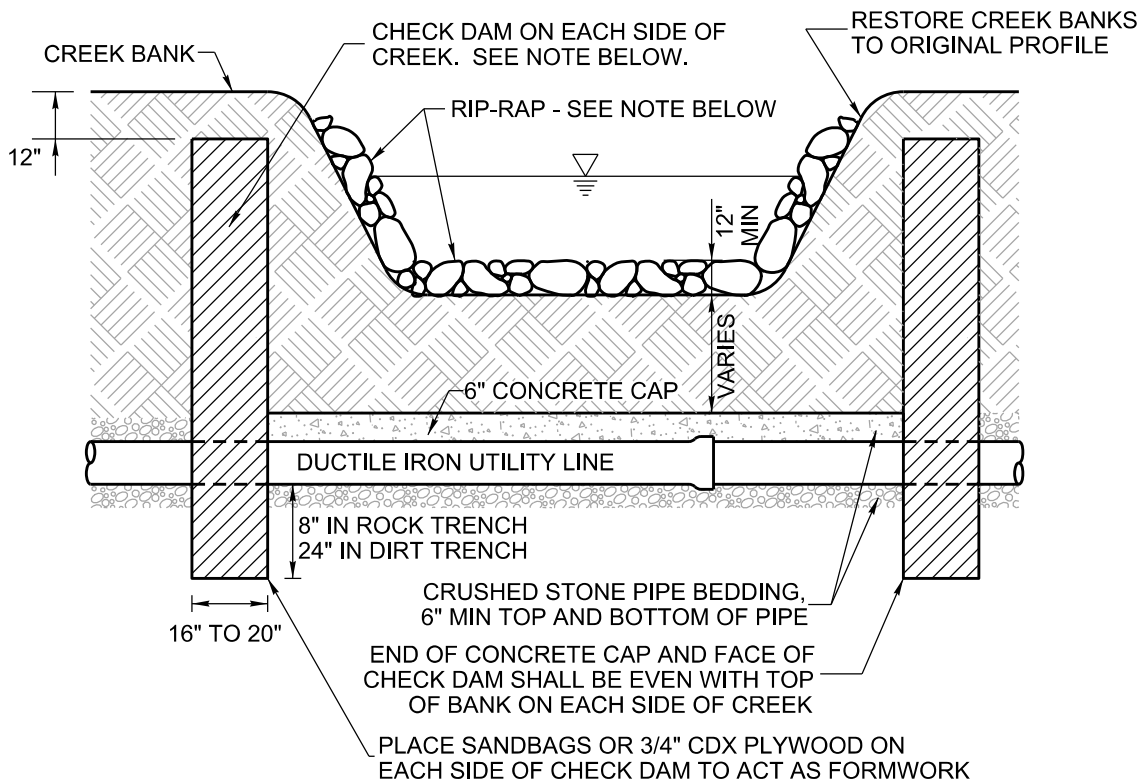


**CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL**

**CASING SPACER AND
END SEAL**

MARCH, 2016

DRAWING NO. M-02



NOTES:

1. RIP RAP TO BE MACHINED RIP-RAP, CLASS A-2, VARYING IN SIZE FROM 2 INCHES TO 12 INCHES WITH NO MORE THAN 20% BY WEIGHT BEING LESS THAN 4 INCHES. THE THICKNESS OF THE STONE LAYER SHALL BE 1' MINIMUM.
2. CHECK DAM SHALL BE CONSTRUCTED FROM GENERAL USE FLOWABLE FILL $F'_c > 150$ PSI MIN. OR COMPACTED CLAY / BENTONITE. CHECK DAM WIDTH TO EXTEND 24" EACH SIDE OF PIPE.
3. NO BLASTING IS PERMITTED IN CREEK. ROCK SHALL BE REMOVED BY MEANS OF HYDRAULIC HOE RAM OR ROCK SAW.
4. INSTALL PLASTIC OR ALUMINUM SIGN, 12" SQUARE MINIMUM SIZE, ON GALVANIZED OR POWDER COATED U-CHANNEL SIGN POST WITH CONCRETE BASE ON EACH SIDE OF CREEK BANK. SIGN SHALL READ "UNDERGROUND WATER LINE BELOW. IN CASE OF EMERGENCY CONTACT CITY OF BRENTWOOD, TN AT (615) 371-0080
5. TDEC APPROVAL REQUIRED FOR OPEN - CUT CREEK CROSSINGS.

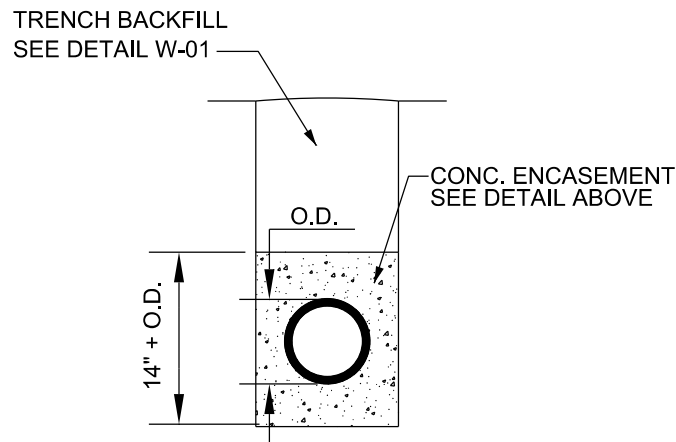
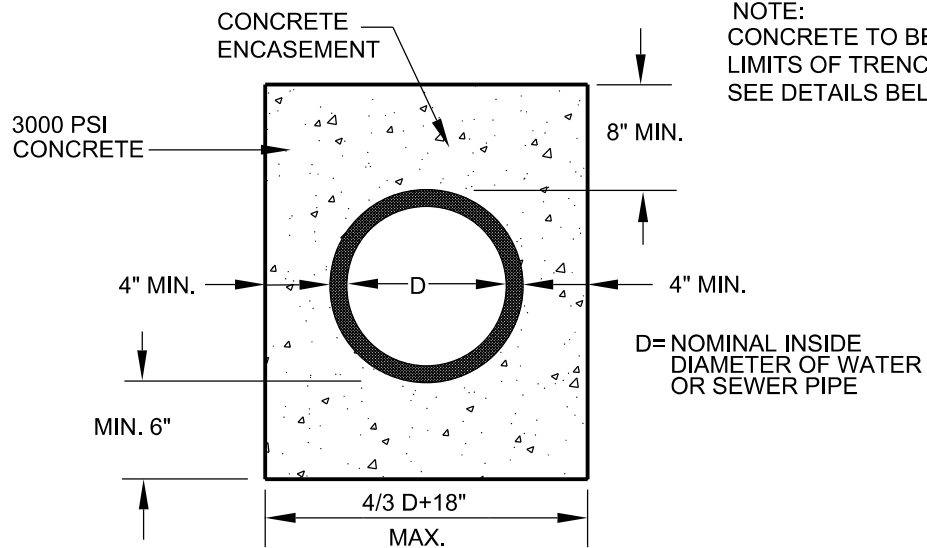


CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL

TYPICAL OPEN-CUT
CREEK CROSSING

MARCH, 2016

DRAWING NO. M-03



STANDARD CONCRETE ENCASEMENT

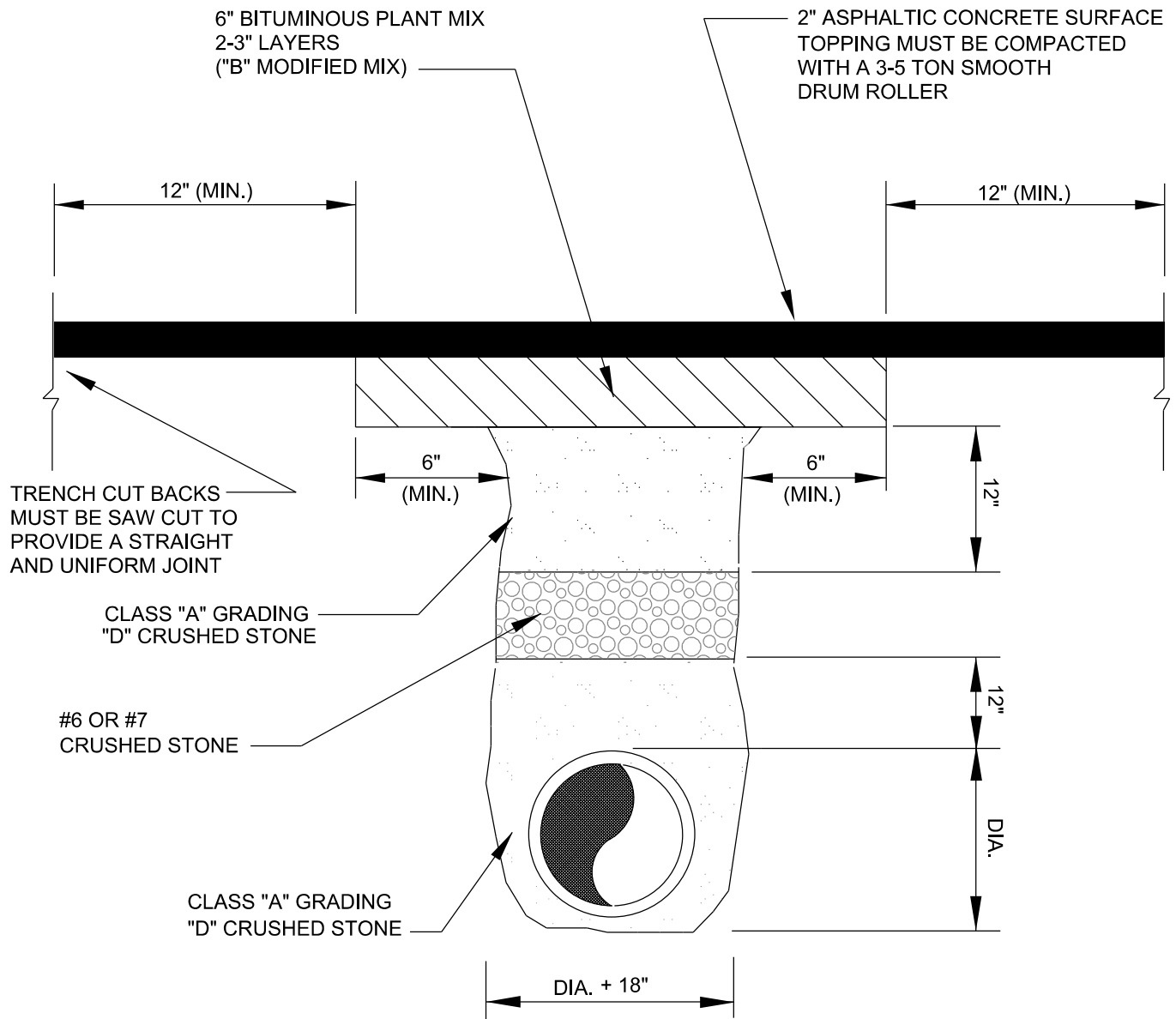


CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL

CONCRETE PROTECTION
FOR UTILITY LINES

MARCH, 2016

DRAWING NO. M-04

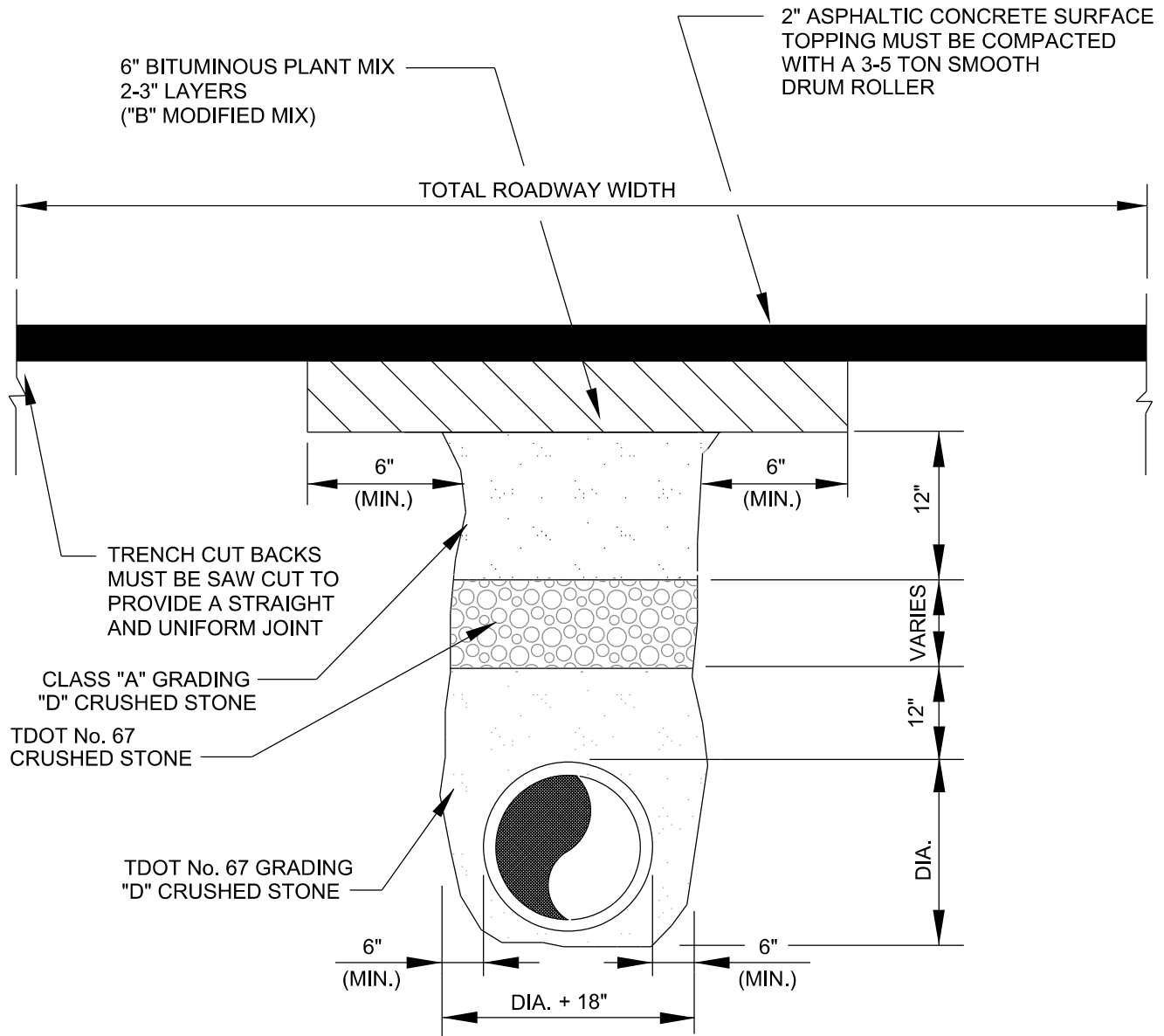


**CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL**

**STREET REPLACEMENT
TRENCH WIDTH**

MARCH, 2016

DRAWING NO. M-05

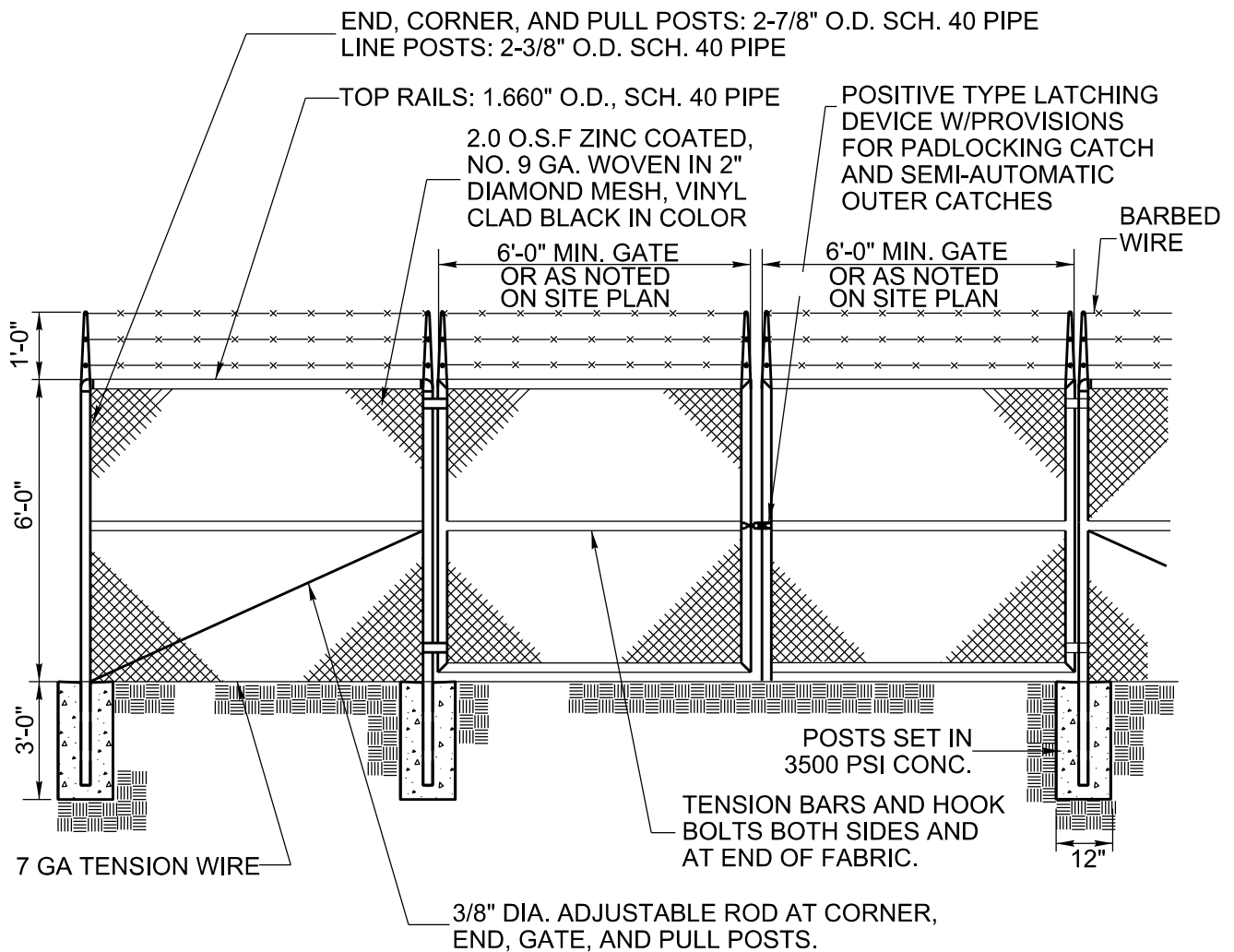


**CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL**

**STREET REPLACEMENT
FULL WIDTH OVERLAY**

MARCH, 2016

DRAWING NO. M-06



NOTE:

ALL POSTS AND OTHER APPURTENANCES SHALL BE HOT DIP GALVANIZED W/ MIN. 2.0 O.S.F. ZINC. ALL FITTINGS SHALL BE MALLEABLE OR DUCTILE IRON OR STEEL. FENCE FABRIC AND ALL APPURTENANCES TO BE VINYL COATED, COLOR TO BE BLACK.

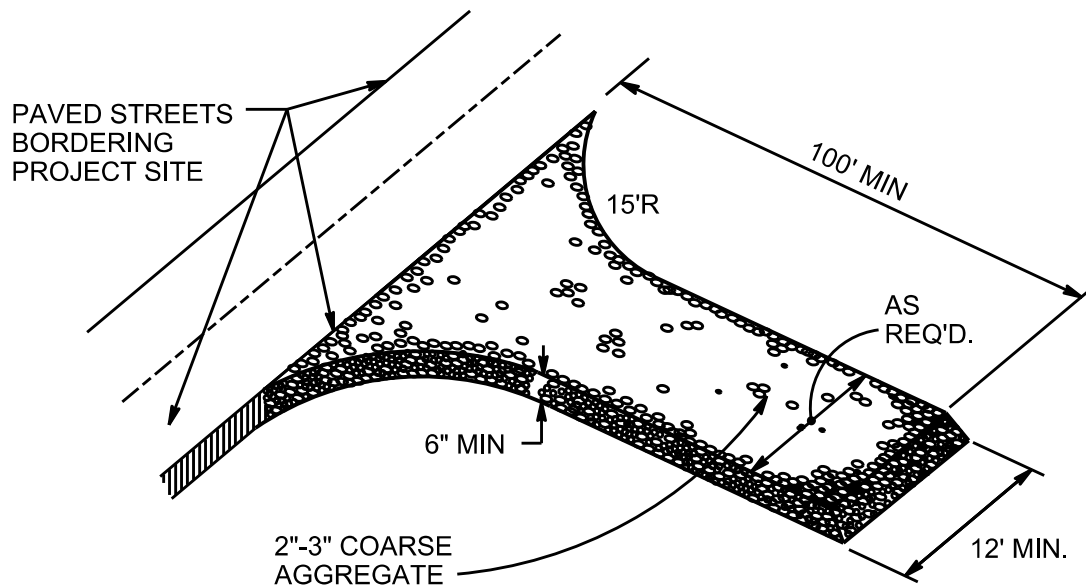


**CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL**

**STANDARD 6'-0"
CHAIN-LINK FENCE**

MARCH, 2016

DRAWING NO. M-07



NOTES:

1. GRAVEL PAD IS REQUIRED TO PROVIDE BUFFER AREA WHERE VEHICLES CAN DROP THEIR MUD AND SEDIMENT TO AVOID TRANSPORTING IT ONTO PAVED STREETS, TO CONTROL EROSION FROM SURFACE RUNOFF, AND TO HELP CONTROL DUST.
2. SHOULD TDEC EROSION AND SEDIMENT CONTROL REQUIREMENTS DIFFER FROM THIS DETAIL, THE STRICTER REQUIREMENTS SHALL GOVERN.

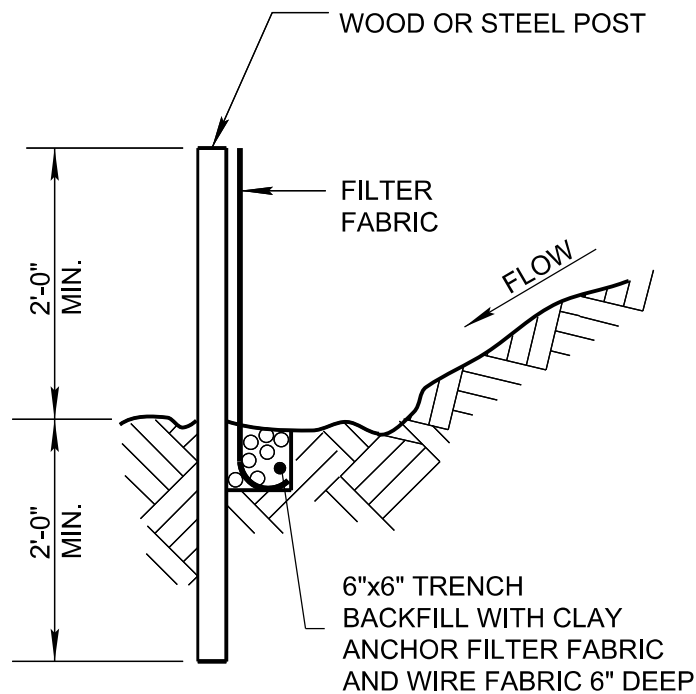


CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL

TEMPORARY
CONSTRUCTION ENTRANCE

MARCH, 2016

DRAWING NO. M-08



NOTES:

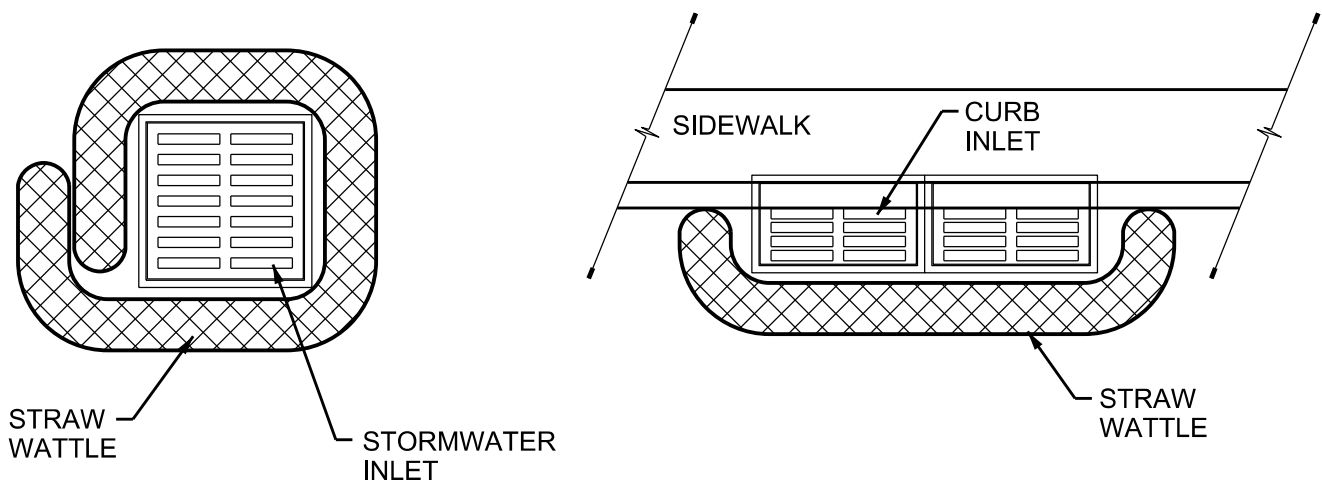
1. FILTER FABRIC FENCE TO BE PLACED PRIOR TO START OF ROUGH GRADING.
2. STEEL POSTS SHALL BE APPROVED BY OWNER PRIOR TO USE.
3. WOOD POSTS SHALL BE 2"x 2" MIN., OAK OR SIMILAR HARDWOOD.
4. POSTS SHALL BE SPACED AT 6' INTERVALS.
5. FILTER FABRIC SHALL BE SECURELY BOUND TO POSTS WITH EITHER STAPLES OR WIRE TIES.
6. FILTER FABRIC SHALL BE POLYPROPYLENE FABRIC WITH EQUIVALENT OPENING SIZE (EOS) OF NO.100 SIEVE MIN., NO.40 SIEVE MAX., AS DETERMINED BY CORPS OF ENGINEERS GUIDE SPEC. CW 02215.
7. SHOULD TDEC EROSION AND SEDIMENT CONTROL REQUIREMENTS DIFFER FROM THIS DETAIL, THE STRICTER REQUIREMENTS SHALL GOVERN.



CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL

TEMPORARY
SILT FENCE
MARCH, 2016

DRAWING NO. M-09



NOTES:

1. STRAW WATTLES SHALL BE MANUFACTURED FROM RICE STRAW AND BE WRAPPED IN A TUBULAR PLASTIC NETTING. THE NETTING SHALL HAVE A STRAND THICKNESS OF 0.03 INCH, AND A KNOT THICKNESS OF 0.055 AND A WEIGHT OF 0.35 OUNCE PER FOOT AND SHALL BE MADE FROM 85% HIGH DENSITY POLYETHYLENE, 14% ETHYL VINYL ACETATE AND 1% COLOR FOR UV INHIBITION. STRAW WATTLES SHALL BE NINE INCHES IN DIAMETER, TWENTY-FIVE FEET LONG AND WEIGH APPROXIMATELY 35 POUNDS.
2. SHOULD TDEC EROSION AND SEDIMENT CONTROL REQUIREMENTS DIFFER FROM THIS DETAIL, THE STRICTER REQUIREMENTS SHALL GOVERN.



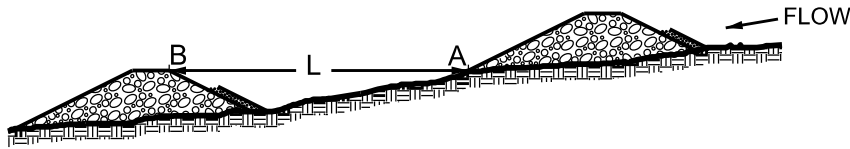
CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL

STRAW WATTLES

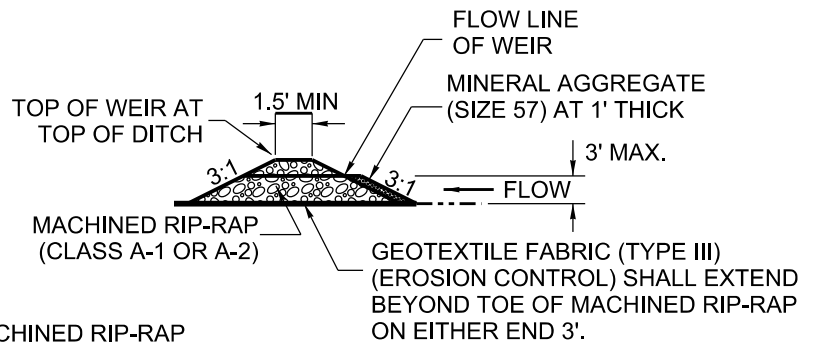
MARCH, 2016

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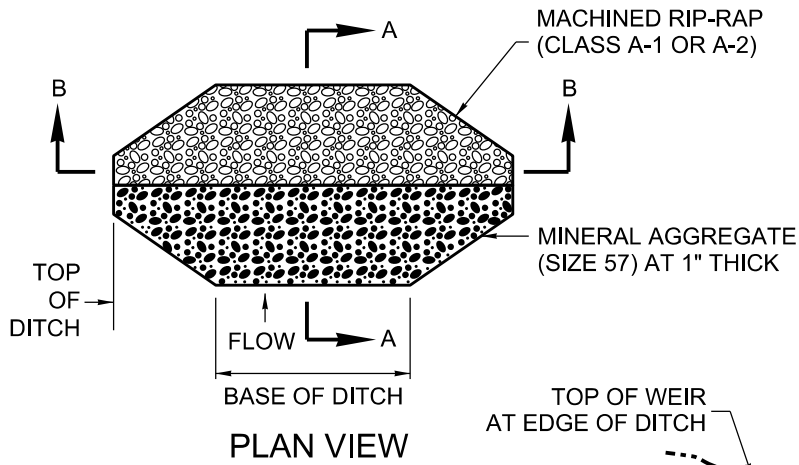
L = The distance necessary to make points A and B equal elevation.



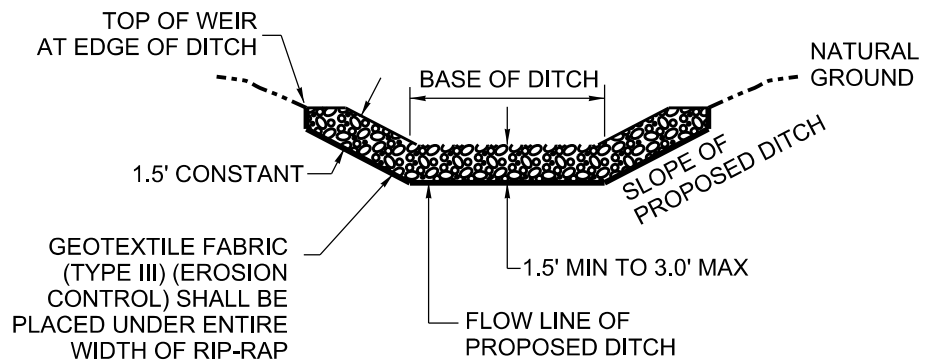
SPACING



SECTION A - A



PLAN VIEW



SECTION B - B

NOTE:

1. SHOULD TDEC EROSION AND SEDIMENT CONTROL REQUIREMENTS DIFFER FROM THIS DETAIL, THE STRICTER REQUIREMENTS SHALL GOVERN.



CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL

ROCK CHECK DAMS

MARCH, 2016

DRAWING NO. M-11